

Saturday 13 January 2018

Amateur

Photographer



Nikon D850

After a tough field test, do we still think it's the best DSLR you can buy?

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Get more dynamic

Boost your dynamic range for
perfect highlights & shadows

Awesome Albert

A celebration of
Albert Watson

How to win APOY

Insights and tips from
this year's victor

Inside Canon's lens factory

AP goes **behind the scenes**
on the L series production line

Who needs a camera bag? Manfrotto's ingenious mirrorless pouch tested

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7days

A week in photography



Most of us take for granted the amazing technology, and the incredible precision, involved in the manufacture of our cameras and lenses. Last month I was privileged to be invited to take a tour around Canon's L series lens factory in Japan. It was the first time anyone from the UK photo press had been allowed to peek behind the scenes. Having tested some impressive

Canon lenses in recent years it was fascinating to watch them roll off the production line and to meet the people who designed them. Read all about it on page 46. Also, whichever camera brand you own, you'll have faced the problem that digital cameras can't record as wide a range of tones as you can see with your eyes. This week James Paterson shares a few techniques for overcoming the limitations of your sensor. **Nigel Atherton, Editor**

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ONLINE PICTURE OF THE WEEK



© STUART SLY

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Loch Rusky by Stuart Sly

Fujifilm X-Pro 2, 10-24mm, 30 sec at f/22, ISO 100

This image of Loch Rusky was uploaded to our Twitter page using the hashtag #appicoftheweek. It was taken by photographer Stuart Sly. Stuart tells us, 'This scene was shot at a local hotspot at Loch Rusky in the amazing Trossachs in Scotland. It is a place that's well known for its very still and calm

water. I used an aperture of f/22 and a long shutter speed of 30 seconds. I always shoot raw with film-simulation mode because it gives me a good idea of the end result straight out of the camera. In Lightroom, I then apply the Fuji Velvia film profile to really punch the colours.'



Win! Each week we choose our favourite picture on Facebook, Instagram, Flickr, Twitter or the reader gallery using #appicoftheweek. PermaJet proudly supports the online picture of the week winner, who will receive a top-quality print of their image on the finest PermaJet paper*. It is important to bring images to life outside the digital sphere, so we encourage everyone to get printing today! Visit www.permajet.com to learn more.

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CD/DVD Send us a disc of high-resolution JPEG, TIFF or PSD images (at least 2480 pixels along its longest length), with a contact sheet, to the address on page 55.

Via our online communities Post your pictures into our Flickr group, Facebook page, Twitter feed, or the gallery on our website. See details above.

Transparencies/prints Well-packaged prints or slides (without glass mounts) should be sent by Special Delivery, with a return SAE, to the address on page 55.

NEWS ROUND-UP

The week in brief, edited by Amy Davies and Hollie Latham Hucker



Primoplan 75mm lens crowdfunder launched

A crowdfunding campaign has been launched to back a new version of the Meyer Optik Görlitz Primoplan 75mm f/1.9 portrait lens. A range of mounts will be available, from Micro Four Thirds all the way up to medium format. The original lens was first introduced in the 1930s, but only 2,000 were made.

Kodak Mini Shot Instant camera revealed

Kodak has launched a compact camera capable of producing credit-card-sized colour prints on 4Pass photo paper. Available in black, yellow or white, the camera features Bluetooth connectivity for transferring images to either an iOS or Android device running the Kodak Mini Shot companion app.



Lifepoint 'AR' printer launched

A portable device that prints images onto ZINK (Zero Ink) paper has been launched. When viewed through a companion app, the photos 'come to life' using augmented reality, displaying moving images or video. Available through Apple, the Lifepoint printer costs £159.99, while film is priced at £29.99 for a pack of 20.

Crumpler bags get new distributor

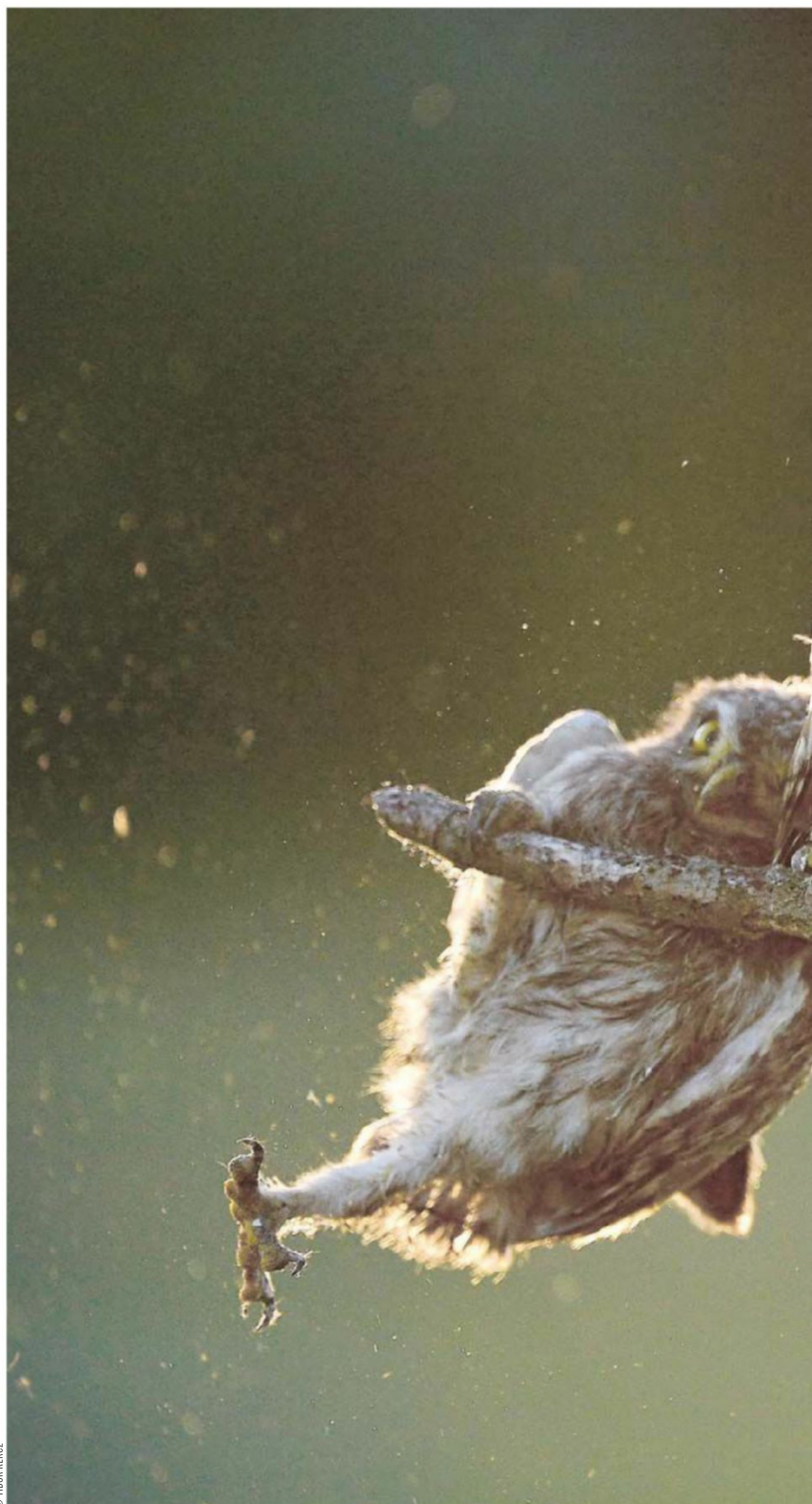
Intro 2020 has been appointed UK distributor of the Crumpler photo bag range, which includes small camera pouches, camera straps, and a selection of shoulder bags and backpacks in various colours and sizes. Crumpler was founded in Melbourne, Australia, in 1995, and each bag comes with a 30-year guarantee. Prices start from as little as £19.99.



Lytro discontinues online platform

Lytro – inventors of the 'light-field' camera, which allows you to change focus point after you've taken a shot – has chosen to discontinue its 'living pictures' online platform. After the announcement, there were enough disgruntled users to prompt Lytro to suggest it might make the platform open source instead. Watch this space for further developments.

© TIBOR KÉRCZ



BIG picture

Comedy Wildlife Photography Award Winner

More than 3,500 photographs from across the world were entered into the Comedy Wildlife Awards 2017. The overall winner and portfolio winner is Hungarian photographer Tibor Kércz, for his series of an owl losing its footing on a branch and desperately trying to claw its way back up. For his prize, Kércz wins



a safari to Kenya, as well as a trophy, backpack and the title of Comedy Wildlife Photographer of the Year. Three other category winners (On the Land, Under the Sea, In the Air) were also chosen. The awards were founded to raise awareness of conservation issues, but with a sense of humour. The competition is set to run again this year. For further information, and to see more winning images, visit comedywildlifephoto.com.

Words & numbers

*Photography is not about the thing
photographed. It is about how that
thing looks photographed*

Garry Winogrand

American photographer (1928-1984)

1,726

Length in metres of the
longest line of photographs.
Achieved by HP Inc in
Saudi Arabia, on 23
September 2017

SOURCE: GUINNESS WORLD RECORDS



Panasonic is now the official photography partner of the National Trust

Panasonic partners with National Trust

A 12-MONTH partnership between Panasonic Lumix and the National Trust has been announced, making Panasonic the trust's official photography partner.

New Lumix National Trust ambassadors have been tasked with the challenge of capturing shots and videos from behind the scenes of several National Trust properties, while members of the public can

take advantage of the partnership via special events, plus the opportunity to borrow some of Panasonic's latest Lumix cameras.

Each ambassador will be using either a Lumix GH5 or a Lumix G9 and sharing their images and videos online via both Lumix UK's and the National Trust's social media channels. The ambassadors will also share their top tips for photography

and using Lumix cameras. All the ambassadors have been chosen for their flair for photography, and all work or volunteer for the National Trust at various sites across the UK.

The National Trust Roadshow is due to start in the spring, which will give members of the public the opportunity to use cameras and lenses from the Lumix G system, as well as participate in specially organised photo walks and events.

Barney Sykes, head of imaging at Panasonic UK said, 'Partnering with the National Trust is the perfect way to demonstrate the superb nature and wildlife capabilities of our latest models, particularly the super-high-speed G9, which can capture full-resolution images at 20fps, and the GH5 which can record 4K video at 60fps.'

Locations you can expect to see in ambassadors' images include Sheringham Park in Norfolk, Croome in Worcestershire, Allen Banks and Staward Gorge in Northumberland, Treillick and Rosalind in Cornwall, and Saddlescombe Farm and Devil's Dyke in West Sussex.

Keep an eye on panasonic.co.uk for details about the roadshow, or follow @LumixUK on Twitter, Facebook or Instagram.



Members can join in walks and events at NT sites such as Brownsea Island



The TL2 has contributed to Leica's success in 2017-2018

Leica celebrates record revenues

THE LEICA Camera Group has announced revenues of almost €400 million in the financial year 2016-17.

This implies a 6% growth for the company, compared to the near 10% decline recorded in the global camera market across the same period. In the first few months of the current financial year (2017-18), the company's cumulative growth stands at 15%.

Leica introduced a number of new products in 2017, including the mirrorless CL and TL2 cameras and the M10 rangefinder. In addition, the company collaborated with Chinese company Huawei on the Mate 10 Pro smartphone.

According to the CEO of Leica Camera AG, Matthias Harsch, China is the biggest growth market, and there are plans to open 20 to 30 new shops in the country.



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Laura Zalenga is just one photographer in the line-up of speakers at 2018's Photography Show



Photography Show's speakers unveiled

THE LINE-up for the Behind the Lens Theatre, part of The Photography Show 2018, has been announced.

Ambassadors from the likes of Sony, Olympus, Atomos, Panasonic, Interfit, the Royal Photographic Society and many other photography specialists will be speaking at the show, covering a wide range of topics from wildlife filming to business techniques.

Speakers at the Behind the Lens Theatre will include Laura Zalenga, an ambassador for Sony, who will discuss her

self-portraiture; Karl Holtby, a Sigma ambassador who has used photography to aid his recovery from illness; and Tommy Reynolds, an ambassador for Pixapro, who spent a week living with a Peruvian tribe to capture videos and stills for an immersive story.

Other ambassadors include Peter Dench, who works with Olympus and will be talking about his photographic heroes; Benro ambassador Tesni Ward, who will discuss her methods for choosing locations for her wildlife

photography; and Alyn Wallace, who will talk about astrophotography. There will also be sessions covering time-lapses and long exposures, close-up documentary wedding photography, wildlife, and how to enter photography competitions.

The Photography Show 2018 runs from 17-20 March at the NEC in Birmingham. Entry to the Behind the Lens Theatre is included in your ticket price. Visit thephotoshowshow.com for more information and schedules for all theatres.



AP editor Nigel Atherton joins Esther Rantzen, Gray Levett (far right) and the Silverline winners

Silverline competition prize giving

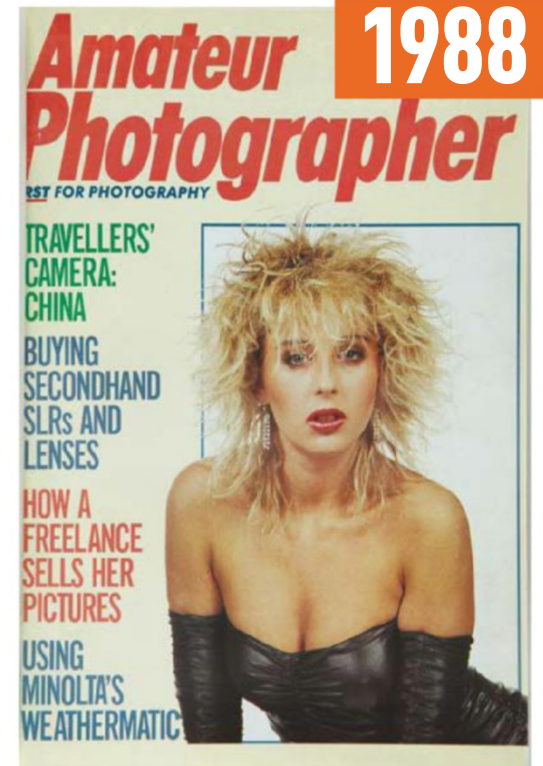
DAME Esther Rantzen presented the winners of AP's Silverline Photo Competition with their prizes last week at Grays of Westminster. The competition, which was kindly sponsored by Grays, asked for positive images of the elderly, and was won by Deborah Brown of Jersey. Second place went to Pete Murrell, and Hayley Lehmann won third

place. All three won Nikon cameras donated by Grays of Westminster, the exclusively Nikon store in based in Pimlico, London. Also in attendance were AP editor Nigel Atherton and Silverline's director of fundraising, Nina Gopal. Silverline is a charity founded by Dame Esther, and runs a helpline for vulnerable older people.

For the latest news visit www.amateurphotographer.co.uk

Back in the day

A wander through the AP archive. This week we pay a visit to January 1988



The Phantom of the Opera opened in London's West End in January 1988 and it's still going strong. On the 9th of that month, when this issue of AP hit the shops, Belinda Carlisle was telling us that *Heaven is a Place on Earth*, but for AP readers, heaven was a photo bargain. In an era when everyone was trading in their old manual-focus SLRs for AF ones, our big feature on secondhand cameras 'focused' on snapping up old manual bargains such as the Canon F1 and Nikon F.

For those looking for new kit, we zoomed in on three bargain lenses from the Koboron brand, which apparently produced the world's first 24-70mm lens. 'If the name Koboron isn't yet well known in this country, it soon will be,' said AP's tester, Lynne Barber. Meanwhile, in the ad pages you could buy Canon's first ever AF SLR, the EOS 650, with a 50mm f/1.8 lens, for £329 in the Tecno sale.



Koboron – 'rapidly becoming a household name'



Viewpoint Mike Smith

Photography is, first and foremost, considered to be something with which we record life. But it has its part to play in death, too

Death is one of the inevitables in life, yet we find our own mortality, and that of our loved ones, difficult to reconcile with what happens after death. And when we lose someone close to us, it leaves an emotional hole that is never filled, the pain just dulling with time. In consequence, memories become bittersweet and photography therefore has a key role to play. The invention of photography coincided with the high mortality experienced by Victorian society, so the development of photos of the deceased (memento mori) is fascinating in how they immortalised the individual (find out more at <http://www.bbc.com/news/uk-england-36389581>).

But the Victorians were not the only ones who approached the subject of death. Nan Goldin, in her seminal work documenting the 1980s New York gay community, not only revealed their lives but also their unexpected deaths. Something she refers to as both a volume of loss as well as a ballad of love.

In coping with death, particularly of the young, relatives seek to record everything about their loss from life – possessions, memories and digital content (think Facebook, Twitter), including increasingly large archives of photos. And they may also want to record the funeral. My limited experience here not surprisingly shows that guests don't want to be photographed, but the family desire a tangible record of the breadth and depth of the life lived.

Capturing the final moment

I photographed my father after he passed away – it was an emotional moment for me, as his death was sudden. Standing in the hospital alone with him, he looked serene, at peace, very much as he had been when I last saw him. I just wanted to be alone and it took me some time before I actually picked the camera up. I shot handheld under the fluorescent light, just happy to be making a record – my last tangible contact with him. Would I go back and do it again if I could? You bet, and I would change a million things. But my preference is actually to remember him as the father from my childhood.



Mike's father, as he would like to remember him

'I shot handheld, just happy to be making a record – my last tangible contact with him'

My belief, then, is that people generally like to remember the young as they were, while there seems to be a preference to remember the old as they once were. At least, that was the case for me. Consider your memories of loved ones and think about how you would want to remember them – and then consider how you would want to be remembered.

All funeral photographers should be commended for the work they do, and we should strive to create these memories, by recording at least some of the scope of what the individual once was. To remember them and keep that essence alive. And that makes the work of UK-based charity Remember My Baby both essential and emotionally draining for those involved. It's a charity thoroughly deserving of support for the work it does and those it serves.

Mike Smith is a London-based wedding and portrait photographer. Visit www.focali.co.uk

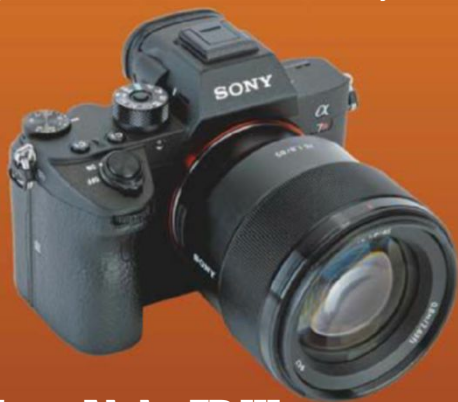
In next week's issue

On sale Tuesday 16 January



Street stories

We profile Helen Levitt - one of the true photographic greats of the 20th century



Sony Alpha 7R III

Is this full-frame powerhouse the most versatile mirrorless camera yet?

Set the tone

Toners can bring a black & white print to life – Tim Rudman explains how

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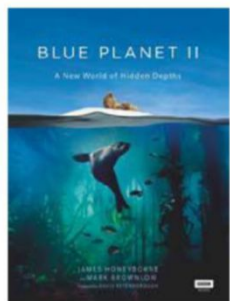
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Bookshelf

Blue Planet II

A New World of Hidden Depths
By James Honeyborne and Mark Brownlow



Go behind the scenes of *Blue Planet II* with the accompanying book

We all know that one of the best parts of television series such as *Blue Planet II* are the behind-the-scenes sections shown at the end of each episode. Here, we witness the genuine hardships the film crew has had to endure in order to bring back footage of the natural world so that we can enjoy it from our sofas.

This particular series was more than four years in the making, and what the crew came back with was painstakingly

edited into seven episodes. Once more, a powerful voiceover comes courtesy of Sir David Attenborough, whose calming, common sense tone is exactly what we all need right now.

This wonderful hardback that accompanied the series reveals some of the incredible discoveries the crew made during their trips – from dolphins that clean their teeth using coral, to green sea turtles that help to boost seagrass meadows by dispersing seeds.

There are more than 200 images in the book. Some are regular stills and some have been extracted from footage shot by the BBC Natural History Unit. The result is an immersive dip into our oceans and a chilling reminder of what we stand to lose if we continue to treat our seas as dumping grounds.

Water covers 71% of the Earth's surface, and a huge percentage of this remains unexplored. Who knows what will be discovered by the time *Blue Planet III* hits our television screens, and in what state our oceans will be when the film crew looks beneath the surface.

★★★★★ Tracy Calder



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Also out now

The latest and best books from the world of photography



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The Master Photographer: The Journey From Good to Great

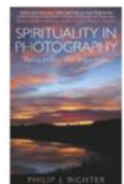
By Bob Ryan, Bouchier Books, £24.99, 139 pages, flexiback, ISBN 978-0993469275



WRITING a book that combines psychology, learning theory and photography is never going to be easy, but in 2016 Bob Ryan – a specialist in analysis and the development of critical judgement – managed just that. This revised edition features more photography (mainly from Alison Price and Andy Beel, as well as a few offerings from the author), but its promise remains the same: if you read it and follow the advice given, your photography will be transformed. Now this is a lofty claim, and I'm inclined to think that anyone who makes such a claim might be heading for a fall. But I was pleasantly surprised. The tips and exercises have been designed to make you think in a different way about your work, and that of others, and this can only be a good thing. ★★★★★ Tracy Calder

Spirituality in photography

By Philip J Richter, Darton Longman and Todd, £9.99, 120 pages, softback, ISBN 978-0232532937



THE SLOW photography movement is rapidly gaining momentum, and this thought-provoking paperback by Methodist minister and amateur photographer Philip Richter is a response to our 'snap happy' culture of selfies and Instagram updates. Richter believes that a carefully crafted picture has the capacity to deepen our vision and sharpen our sense of what life is truly about, and he draws on writer Thomas Merton's description of the camera as a 'contemplative instrument' to prove his point. Ironically, the book is a fast read and only contains a handful of photographs, but what it does do is encourage the reader to adopt a patient approach to photography, while remaining fully present. It's a workbook of sorts, and its basic design means that you don't feel bad about scribbling your thoughts in the margins and designated spaces.

★★★★★ Tracy Calder

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LETTER OF THE WEEK

That is sick

When our 18-year-old daughter told me her new boyfriend was a 'tog' I hadn't a clue what she meant. She always uses irritating street talk. When she referred to our new flat screen TV as 'sick' I shook my head until my wife explained 'sick' stands for 'cool.'

Anyway, her boyfriend Daniel is a photo - tog - grapher hence the daft moniker. But a tog who uses an old Minolta X700 and various old Rokkor lenses. He shoots in black and white which he calls 'retro' and says he loves the 'vibe' of it. But it was when he called my old Pentax Spotmatic 500 a 'boneshaker' that I began to bristle... Of my old Lubitel Russian TLR, Daniel said focusing it was like looking through the bottom of a milk bottle. My Nikon D500 fared much better. 'Wow man, that is one sick piece of kit.' As he said it he was wearing jeans that had more holes than denim and a T-shirt proclaiming 'death to capitalism'. At his age I was wearing massive flares and would have thought that the Spotmatic (my first SLR) I saved hard for back in 1976 was pretty 'sick'. And despite Daniel's less-than-flattering description it still works brilliantly! **Terry Armstrong**

I love this letter as it partly explains why there is such a film revival at the moment – it's great to see a whole new generation getting into the joys of analogue. Everything comes in cycles and while the clinical precision and convenience of digital is to be applauded, you can see why some photographers want something different and less predictable. Old film cameras often look 'sick' too – **Geoff Harris, deputy editor**



Terry says his Pentax Spotmatic still works well

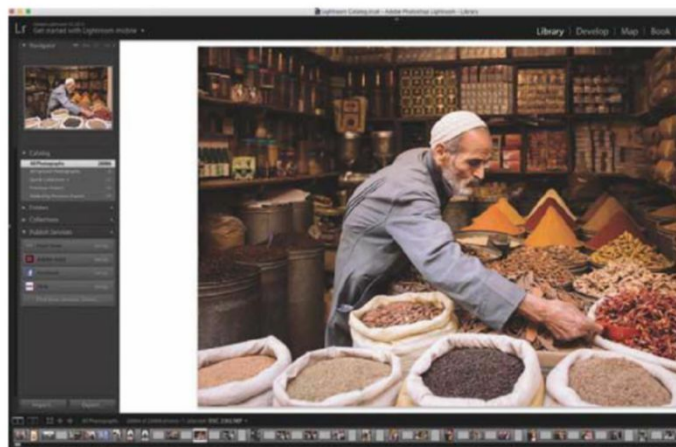
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Declaration of raw

I was a wee bit surprised that you made no mention of ACDSee Ultimate 2018 in your alternatives to Lightroom feature recently (*Life Beyond Lightroom*, 16 December). I moved from Adobe CC some months ago and have found it an excellent all in one replacement. It has good digital management (no need to catalogue) it's got

keywording, plus I think it has all of Lightroom's other abilities to apply digital management filters to images. ACDSee does everything I was able to achieve in Lightroom, and while it takes a bit of learning, that applies to all software. It's even got layers, making it a great all in one program.

Anyway I enjoy the magazine coming through the post, and the



Lightroom makes short work of raw processing but isn't the only game in town

excellent articles therein.

Murdo MacDonald

Several photographic magazines have recently had articles looking at alternatives to the Adobe Creative Cloud, so I was particularly interested to see you running a similar article – *Life Beyond Lightroom*, 16 December. However, I was disappointed to see that there was no mention of Corel AfterShot Pro. I stopped using Adobe when they changed to the subscription system and after looking at various other programs I settled for AfterShot Pro. I am no expert when it comes to processing digital photos but I have found that AfterShot Pro is capable of doing anything that Lightroom could do, and it is accompanied by PaintShop Pro which is an equally good alternative to Photoshop.

Terry Newman

Thanks for the feedback, **Murdo** and **Terry**. **Space was limited** and **Rick McArthur** focused on the most popular and best value alternatives to Lightroom at the time of writing, but you can be sure we will be returning to this subject again – **Geoff Harris, deputy editor**

Waiting with X-citement

Though the Fuji X-series cameras have been out for a while, the only third-party manufacturers to produce lenses for this format has been Zeiss (expensive) and Samyang (manual only).

It would be nice if the likes of Sigma and Tamron could support this X format with some cost-effective auto lenses. Do you know when this may happen, as I am looking to buy a 10-20mm and a 100mm macro lens early next

year and my budget won't stretch to the Fujifilm prices?

Gerald Chance

Sorry, we know nothing definite about Sigma's or Tamron's plans about this either, but keep reading AP for news – Andy Westlake, technical editor

Black and right

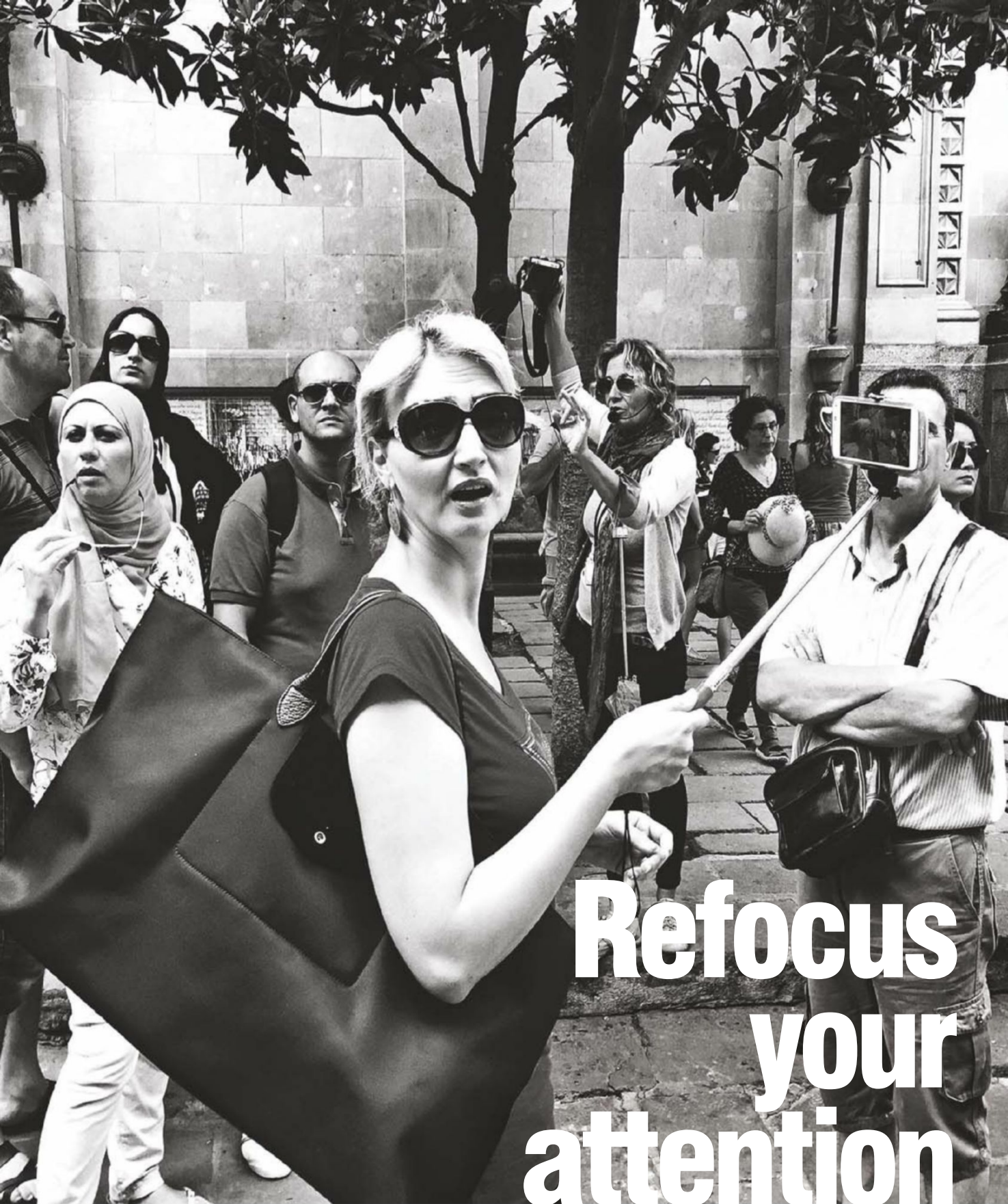
Is AP going to do a more basic feature on black & white film photography? The Tim Rudman feature (AP 18 November) on darkroom toning was good but it was quite advanced. It would be nice to see a more basic guide including what film is currently available, how to compose and expose for mono film and film camera bargains etc. I know several people who like the look of black & white film, so they get their film processed and then scan it to create a digital file. It would be good to see AP discussing the pros and cons of this and other approaches.

Stuart Edwardes

Great minds think alike, Stuart. There will be a 'get started/ refresher' guide to black & white film photography in our issue dated 10 February 2018 – Geoff Harris, deputy editor



Expert film photographer Matt Parry is writing a feature on black & white



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**STREET
PHOTOGRAPHY**

Get more dynamic

James Paterson explains what dynamic range is, why it's important and how to maximise it in your photographs for perfect exposures

In any given scene there will be two opposing points when it comes to light: the absolute brightest and the darkest. Let's say we've hiked to the top of a mountain range at sunset. Pointing our camera westwards, the brightest point in the frame will almost certainly be the sun in the sky. Meanwhile the mountains in the foreground are in shade, so the darkest part of the scene might well be deep inside a cave in the face of the rock. The difference in brightness between these two points is called the dynamic range of the scene.

Eye vs camera

With the naked eye, we could probably discern detail in the sunset sky and the dark cave. But our cameras aren't capable of capturing the same dynamic range as our eyes. So in high-contrast situations like our sunset scenario, the dynamic

range capability of the camera can't match that of the scene. The camera won't be able to record detail in both the highlights and shadows at once, so we have to compromise and expose for one or the other. Inevitably, this means that part of the scene will be recorded as pure white or black, and be completely lacking in detail.

Dynamic range isn't a term that's specific to photography, it can be used to describe any range of values, like the quietest and loudest noise made by a musical instrument, or the fluctuating current of an electronic signal. In photographic terms, it's a measure of luminance, so naturally we can think of it in terms of stops of light. A stop is either double or half the light. The more stops a camera is capable of capturing without clipping either the shadows to black or the highlights to white, the greater the dynamic range.

James Paterson



James is a skilled photo editor and photographer. His work has appeared in countless magazines and books, and in 2014 he was appointed editor of *Practical Photoshop* magazine. Visit www.patersonphotos.com

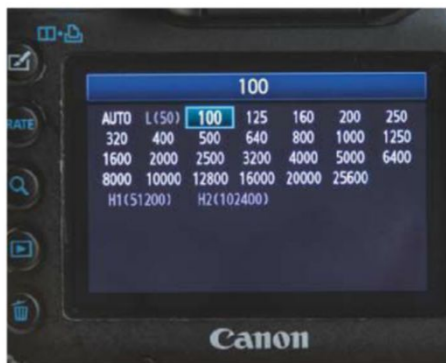
ALL PICTURES © JAMES PATERSON

MAXIMISE YOUR CAMERA'S DYNAMIC RANGE



Use a low ISO

Lower ISOs result in images with a higher dynamic range, as the less noisy, the greater the detail held at the tonal extremes. There's one caveat – extended low-ISOs such as Canon's ISO 50 may actually result in less dynamic range, as the image is effectively overexposed on capture, then corrected.



Shoot in raw format

Raw files contain greater information in shadows and highlights because they hold all the raw data the sensor is capable of recording, whereas JPEGs discard excess data. So raws give you greater dynamic range than JPEGs, which is especially useful for high-contrast landscapes.



Expose to the right

Shadows contain higher noise levels than highlights. Create a higher-quality image by making it as bright as possible without clipping the highlights, before correcting it afterwards. This effectively lowers the base ISO. It's known as 'exposing to the right', as the histogram will pile up towards the right side.

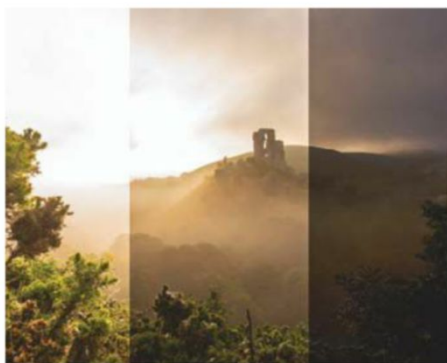


To maximise dynamic range and image quality, push the highlights as close to clipping as possible; then if necessary correct overexposure later



Extend the range

Some cameras have features that maximise dynamic range: Canons offer Auto Lighting Optimizer and Nikons have Active D-Lighting. You might also have a 'flat' or 'neutral' picture style, which can be useful when shooting video, as it produces a flat image that offers greater latitude for editing later.



Bracket your exposures

If you're using a tripod, then you can safeguard against clipping by bracketing your exposures. Afterwards, you can choose the file that gives you the best dynamic range. What's more, it gives you the option to blend the exposures together later on or make an HDR image from the set.



Use exposure compensation

Your camera's exposure compensation dial can be very useful for controlling dynamic range, as it lets you dial in more or less light. When employing the 'expose to the right' technique, try using exposure compensation together with highlight warnings to push the histogram as far to the right as possible without clipping.

How do cameras compare?

Modern cameras are at something of a plateau in terms of resolution. These days most of us have as many pixels as we need. Dynamic range and low-light performance are the new frontiers in camera innovation, and some cameras are ahead of others in this regard. So which cameras offer the greatest dynamic range? Typically the larger the sensor size, the greater the dynamic range. Larger sensors have deeper photosites, which are capable of drawing in more light before reaching capacity. In theory full-frame DSLRs will outperform APS-C and Micro 4/3rds sensors.

However, it's not quite as clear-cut as this. You will not find a dynamic range specification in your camera's manual, partly because it can be difficult to quantify. For example, the statisticians at sensor analysis site DxOMark place Nikon and Sony DSLRs (which share the same Sony sensors) ahead of Canon cameras, whereas other sites put Canons on a par.

The confusion may stem from differing testing benchmarks. At the lowest part of the range there comes a point where

noise takes over detail in the shadows, so the acceptable level of noise is open to interpretation. It might be stated that a certain camera has 14 stops of dynamic range, but in practice, they may not all be usable stops. What's more, dynamic range performance can vary depending on the ISO setting. For example, according to DxOMark the Canon EOS 5d Mark IV lags slightly behind the older Nikon D810 at ISO 100, but at ISO 400 it has the edge.

The subject of dynamic range also plays a fascinating role in the film vs digital debate. Interestingly, when it comes to usable dynamic range DSLRs have only recently caught up with analogue film, especially in regard to the way film holds a staggering level of detail in the highlights. The latest DSLRs exceed the dynamic range offered by film, which max out at around 13 stops. By contrast, modern DSLRs typically reach the 14 stop mark. However, the raw files these cameras produce often look flat straight out of camera, as the manufacturer expects the photographer to want to process the image and manipulate the dynamic range in their own way. By contrast, analogue film stocks can give a rich range of tones straight away.

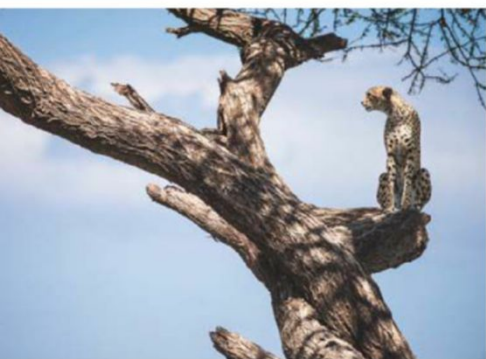
Shrinking dynamic ranges

It's not just the dynamic range of the camera that is important; dynamic range plays a part in all stages of image-making. First there's the scene's dynamic range – the actual luminance values present. Then there's the camera's dynamic range – the range of luminance the sensor is capable of recording. After this there's the smaller dynamic range of your computer screen – even the best screens max out at about 10 stops under perfect viewing conditions.

Highlights and Shadows

Understand your histogram to avoid clipping highlight and shadow details

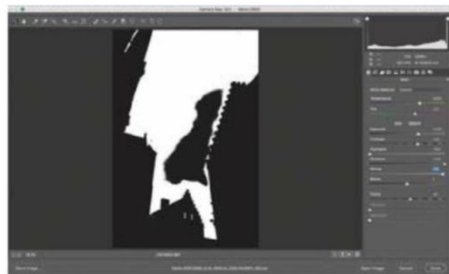
Sometimes clipped highlights will add to your image if you're after a high-key look



If your subject is framed against a bright sky, pull back detail in the sky by darkening the blue tones

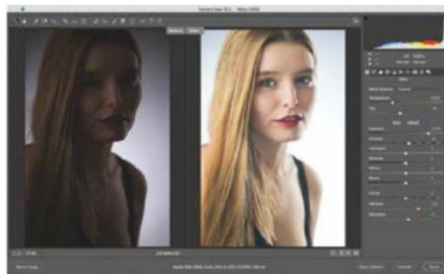


CORRECTING SHADOWS AND HIGHLIGHTS



1 Set black & white points

In Lightroom and Photoshop's Camera Raw we can check for, and sometimes rescue, clipped pixels by holding Alt while dragging the whites or blacks sliders. This gives us a view that shows clipped pixels as we drag. We usually want whites and black on the very edge of clipping, as this gives us a tonally rich image.



2 Fix any underexposure

Modern sensors are capable of recording an incredible amount of detail in the shadows. Even a badly underexposed image like this (3 stops underexposed) can be rescued. After increasing the exposure by +3 and applying noise reduction, the image – while not as good as a correctly exposed frame – is still usable.



3 Correct any overexposure

Landscapes are a good test of a camera's dynamic range, as skies tend to be brighter than land. If a sky looks overly bright, it's easily adjusted in Lightroom or Camera Raw with a Graduated Filter adjustment. We load the tool with negative exposure and a little Clarity and Contrast, then drag through the image.

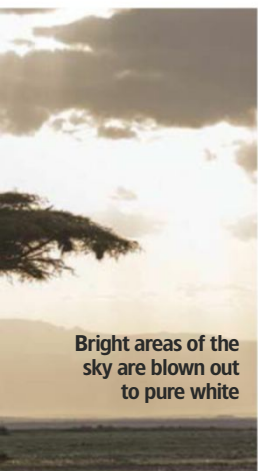


Turn the highlight clipping warning on your camera. Areas clipped will be red

symbols for under or overexposure in the viewfinder. You can also turn on clipping alerts that flash over the frame when you're reviewing. There are different ways to enable them – on a Canon press the Info button, and on a Nikon press the down arrow to see the file info.

Is clipping always bad?

We photographers can be a little obsessive about detail. But if an area of an image is meant to be very dark or very light, ask yourself whether it really needs to hold detail at all. There's nothing wrong with clipped pixels if that's what you intend for the subject or scene.



Bright areas of the sky are blown out to pure white

What is clipping?

If areas of a scene are too bright or too dark for your exposure, then they'll be 'clipped' to pure white or black. This means these areas will be detail-less. You often see it happen in landscapes with bright skies, where the brightest part of the sky can be blown out to pure white like this.

Deep shadows

Metering systems are biased towards highlight protection. As such, high-contrast scenes might look slightly underexposed as the camera will attempt to preserve the highlights. It's easier to tease detail out of deep

shadows in post-processing than it is to rescue clipped highlights.

Read the histogram

The histogram represents all the tones in our image, stacked in terms of brightness from black on the left to whites on the right. A healthy histogram is one that reaches down to 'sea level' at both ends. If the peaks intersect on either side of the graph it means some pixels are clipped, like the highlights here.

Check camera warnings

Many cameras will display warning



If a histogram shows peaking on either end of the graph, some pixels are clipped



4 Tone bright images

To correct overexposure, or compensate for exposing to the right, we simply knock back the exposure in our chosen image-editor. If areas are blown out we can pull back a little detail (especially with raw files), but any clipped highlight pixels can't be fixed; they'll simply go slightly off-white.



5 Tease out the shadows

It's easier to pull detail out of shadows than rescue blown-out highlights. In Lightroom or Camera Raw we can use the Shadows slider to lift the darker tones, or selectively lighten areas with local adjustment tools. Lifting shadows can lead to increased image noise, so counteract this with noise reduction.



6 Colour luminance

Colour luminance settings can give you control over dynamic range. In Lightroom and Camera Raw this can be done with the HSL/Color Panel's Luminance tab. We can either use the sliders or drag over the image with the target tool. Darkening the blues here dramatically improves the sky.



High dynamic range can be done tastefully and is more similar to how our eyes view a scene

➤ Then finally there's the much more limited dynamic range of a print, which of course can only ever go as white as the paper.

If our screens and prints aren't capable of displaying the dynamic range our sensor records, then why should we be concerned about how much our camera can pick up? It matters because of the extra latitude a wider dynamic range affords when editing the photo. We can compress that wide dynamic range captured in a way that suits our vision for the image. This involves making local adjustments to lighten or darken parts, such as applying a graduated filter in Lightroom to darken an overexposed sky.

Should we be concerned?

We needn't be worried. For the majority of subjects and scenes the difference between the brightest and darkest point is not so great that our camera will struggle to capture detail in both the highlights and shadows. As long as we expose correctly, we're fine. It only becomes a problem in scenes with very high contrast. This is why dynamic range performance is more important to landscape photographers – who could be confronted with scenes that have a dynamic range of 20 stops or more – than it is to studio photographers, who can control the light as they please.

Greater dynamic range is also very handy when our metering slips up, as detail can be extracted from shadows or highlights to rescue the image. So it gives us a welcome safety net in tricky lighting conditions or fast-paced shooting scenarios when there's little time to get exposure spot-on.



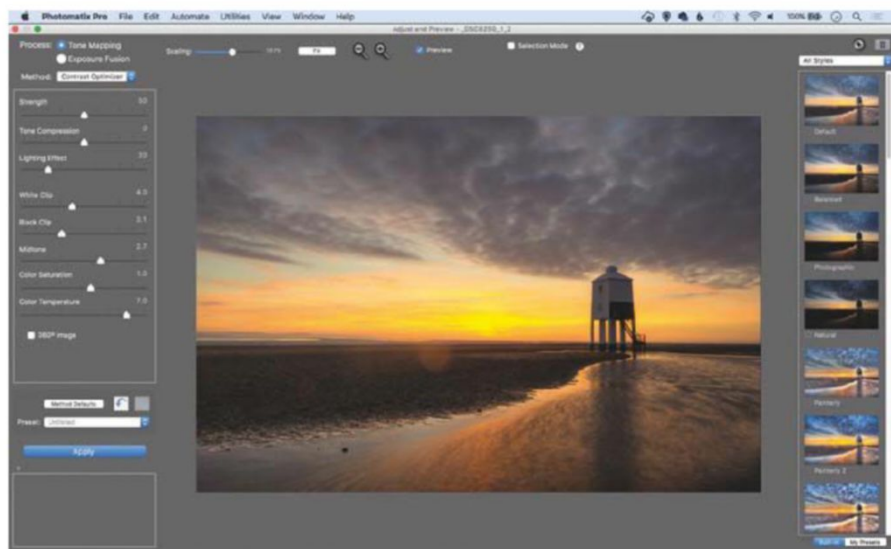
Tasteful HDR

MENTION dynamic range and many will instantly think of high dynamic range photography, or HDR. This is the process of taking several bracketed exposures – using a tripod to keep them in alignment – then blending them into one detail-rich frame. HDR images are often regarded as overcooked and unrealistic, festooned with garish colours and halo-inducing edge details. This is a look that's become synonymous with HDR photography, but it's just one of many potential treatments.

HDR is more than just a look, it's a function that allows you to extend dynamic range beyond the capabilities of your camera. In fact, in this sense one could argue that HDRs

are more realistic than normal images. Our eyes have a higher dynamic range than our cameras, so when processed in a natural way, an HDR image has the potential to resemble more closely how we view the scene.

It's this natural look that's key, so how do we create tasteful HDRs? There are several dedicated HDR programs and plug-ins that offer natural-looking presets, such as Photomatrix's Balanced preset here. Lightroom and Camera Raw also include an HDR Merge feature that results in a natural-looking blend. Once you create your HDR it's worth getting stuck in with local adjustments, as there's far more hidden detail that can be teased out.



For tasteful HDR, dedicated HDR programs and plug-ins will offer natural-looking presets

If you're working with subtle nuances of colour, consistency is everything. You want exactly the same tones every time you switch on your monitor and you want those shades to be as true to life as possible. There's nothing worse than pouring your heart into a job and then finding out the colours you were looking at weren't accurate. And it's always disheartening when you compare a print with the subject and find the colours are miles apart.

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What it takes to win

Amateur Photographer of the Year 2017, **Henrik Spranz**, talks to AP about what it takes to come out on top

How does it feel to win Amateur Photographer of the Year 2017?

It's an almost surreal experience. I started to get my hopes up a bit after performing well in some of the rounds, but I didn't like to assume anything! I'm really happy and very proud – it's wonderful feedback for my work.

When did you take up photography, and why?

Like many others I became interested in photography after buying a camera to record my travels – this was back in 2006. In the years that followed I was annoyed because some of the images I took didn't turn out as I had planned. As a result I decided

to learn about photography and make some progress.

Are you self-taught or professionally trained?

The only workshop I have ever attended looked at basic editing techniques, but I have a passion for learning, so I have read various books on technique, composition etc. I have learnt a bit from fellow photographers (including the woman in my life: Perdita Petzl) and also from magazines.

How do you find time for your photography whilst working as a software developer?

I am out exploring nature most weekends during spring, summer

The tight spiral of this staircase leads the eye nicely into the picture



Round 1
(No points)

Round 2
(43 points)

and autumn. My girlfriend (Perdita) and I do this together. We often head out long before sunrise and start with a macro shoot followed by a wildlife shoot.

Do you find photography to be a good stress reliever?

Photography helps me to create balance in my life. It clears my mind, slows down my thoughts, and allows me to be creative, which is something that is missing from my day job. Since I began photographing nature I have seen

Right: The pastel colours and the light behind the black-veined white butterflies really makes this shot

Middle: The background creates maximum impact in this picture

Far right: Keeping the focus just where it's needed has led to a really striking image here





There is a palpable sense of loneliness to this picture – as though we are waiting for the main characters to appear

so many sunrises and faraway, silent places that sometimes I stand there for a while and just take some deep breaths to inhale the sheer beauty of the moment.

What are your favourite photographic genres?

When I started out my favourite genre was landscape photography – I still love it, but nowadays my focus is mainly on macro and wildlife photography.

You have described macro photography as like painting on the sensor – can you explain this?

What I love about macro photography is the opportunity to be creative. While butterflies and other insects are still being torpid you have time to choose a perfect viewpoint, wait for the right light, do your best to include the colours and textures of the habitat in an idealised, abstract or impressionistic way. The result is something like a painting.

You say that you like to have a macro lens on you all of the time. Why is this?

Most of the time I have a macro lens with me – even when I intend to shoot landscapes. Sometimes I find mushrooms or wild orchids in a forest, near a gorge or close to my favourite lake. When conditions are not quite right for landscape photography they can often be fine for macro photography.

If the conditions are poor how do you control the urge to come back with something for your efforts?

If I'm visiting a location and the conditions are poor it can be frustrating, but there are usually alternatives. When the light is bad for landscapes you can sometimes shoot macros – even on an overcast day. If it's too windy



**Round 3
(49 points)**



**Round 3
(43 points)**



**Round 3
(40 points)**



European ground squirrels are very shy, so Henrik has done a great job to get so close without disturbing their natural behaviour

Round 5 (49 points)

for macro I use the chance to carry out a recce for next time.

Are there any photographers who inspire you?

My greatest inspiration is Perdita. We constantly push each other to new, higher levels. There are also many French macro photographers who inspire me to play around with background bokeh and experiment more with composition.

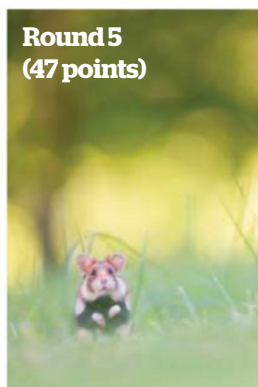
Did you enter all of the rounds in APOY? Which ones did you find the hardest?

Yes, I entered all of the rounds in the competition, but it was difficult for me to compete in some of the genres because there are so many fantastic specialists out there. The landscape round was particularly challenging because the standard was especially high and it's actually just a sideline for me.

Right: The framing of this picture highlights just how small the wild European hamster is. Henrik has ensured great eye contact with the animal too

Far right: The contrast of the soft bokeh against the texture of the fox's fur works well here

Round 5 (47 points)



Round 5 (22 points)



Do you have a favourite image from those that you entered?

I am fond of the wildlife images – in particular the hamster, ground squirrel and black-veined white butterfly pictures – but the shot entitled Weave (see page 26), which won the Creative Eye round, came out exactly as I intended so this pleased me immensely. It's part of a series entitled Forest's Soul, which features experimental pictures of forests during every season. I had it in my mind for some time, but had to wait a while for the snow.

You say that your style is more romantic than documentary – can you tell us more about this?

I can't deny that there's still a child in me that has its own view on nature – it wants to see the natural world as a fairytale full of wonders. To communicate this impression I need to choose the right conditions and techniques. Bokeh is very important in my wildlife and macro

work, as is the use of bright exposures and pastel colours.

Are there any conditions that you tend to favour?

Nothing can beat the light at, or immediately after, sunrise for my kind of macro photography. Some days I feel that an image puts itself together, but on other days things just don't work out and a little rant can help! After calming down and listening to some birdsong I usually give it another try.

How much post processing do you carry out?

Some viewers think that I carry out a great deal of post-processing, but I don't. I usually tweak the white balance, make some tonal corrections, work on colour contrast and curves, reduce noise, sharpen, and remove any sensor dust. What I don't do is remove or add objects, change the composition or manipulate the main elements.

Below: A striking cityscape with rich colours and a pleasing reflection



Round 4 (No points)

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 **WHITE WALL**

Round 6 (50 points)

Henrik had this image, entitled Weave, in his mind's eye for quite some time before the conditions were just right

▶ What has photography taught you so far?

Everything needs time – you can't force things, especially in nature. To get my work to where it is now took me hundreds of hours and I am still developing. You need to find your own style and please yourself in the first instance.

How do you go about planning a photo shoot?

It depends on the genre: when I'm shooting macro I have the location sorted but I need to be there when the conditions are right, which usually means getting in position before sunrise. There are times when I have an image in mind, but



As overall winner of APOY 2017, Henrik wins Sigma kit worth more than £2,000, namely a SIGMA 85mm F1.4 DG HSM Art lens (£1,199.99) plus a SIGMA 35mm F1.4 DG HSM Art lens (799.99) and a SIGMA USB Dock (£39.99). To see more of his photographs visit www.spranz.org.

still need to find the right subject to create it. When I shoot landscapes I don't expect to get my best pictures the first time that I visit a location. It's much more important to scout out the area.

Can you tell me about the equipment you use?

I use a Canon EOS 5D Mark III and my most frequently used lenses are a Canon 180mm f/3.5L Macro, a Canon 400mm f/2.8 L IS and a Canon 16-35mm L IS.

Any tips for next year's entrants?

Don't be discouraged if you're not a specialist in every genre. You can't rule all of the rounds!



**APOY
2017**

In association with
SIGMA

Henrik's image placements
in **APOY 2017**

ROUND ONE
Monochrome No points

ROUND TWO
Hit the Streets 43 points

ROUND THREE
Small Wonders
49, 43, 40 points

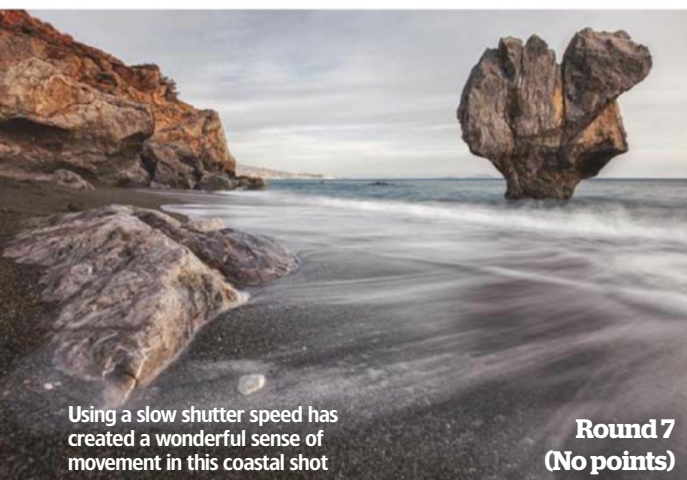
ROUND FOUR
City Clickers No points

ROUND FIVE
Into the Wild
49, 47, 22 points

ROUND SIX
Creative Eye 50 points

ROUND SEVEN
Land Lovers No points

ROUND EIGHT
Face to Face No points



Using a slow shutter speed has created a wonderful sense of movement in this coastal shot

**Round 7
(No points)**



**Round 8
(No points)**

Focal Length: 600mm Exposure: F/11 1/800sec ISO: 500



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Sheer KAOS

Albert Watson is well known for his iconic portraits and diverse, highly creative imagery. **Steve Fairclough** speaks to him about his career and new book *KAOS*

For over 40 years the intensely powerful photography of Albert Watson – whose images range from film director Alfred Hitchcock holding a goose to a chimp brandishing a gun – has provoked, delighted and amused people around the world. His diverse body of work stretches

across many photographic genres and a huge collection of it is showcased in his new book *KAOS*. Although blind in one eye since birth – hence his first book was titled *Cyclops* – Watson has established himself as one of the world's leading exponents of photography, so much so that the US publication *Photo District News*

(PDN) named him one of the 20 most influential photographers of all time.

Speaking to AP from his New York City studio Watson admits he wasn't serious about photography till he was 21. 'I began to become really interested in it and then to become obsessed by it,' he says. 'Sometimes people pick up a piece of food that they like and they go, "that's delicious" and their whole life they find it delicious. I really enjoy a bacon roll, which is something that Americans don't ever do. If you ever go in and ask for a bacon roll [in the USA] they ask, "Do you want an egg on it?" but I'll say, "No, just a bacon roll." So I think you kind of taste it and think "that's delicious", and you stay with it.'

Above left: The God Sign, Route 15, Las Vegas, 2001





'Photography is sometimes... kind of a "Venus flytrap" of equipment'

But Watson warns, 'Photography is sometimes, for men more than women, kind of a "Venus flytrap" of equipment where a lot of people get sucked into photography because they love the equipment. That's kind of a sad thing. I've actually come across so many assistants who are fantastically good technically and very interested in photography but, for some reason, [are unable] to make that jump into personal creativity.' He adds, '[Photography] was something that felt very



Above: Jack Nicholson, New York City, 1998

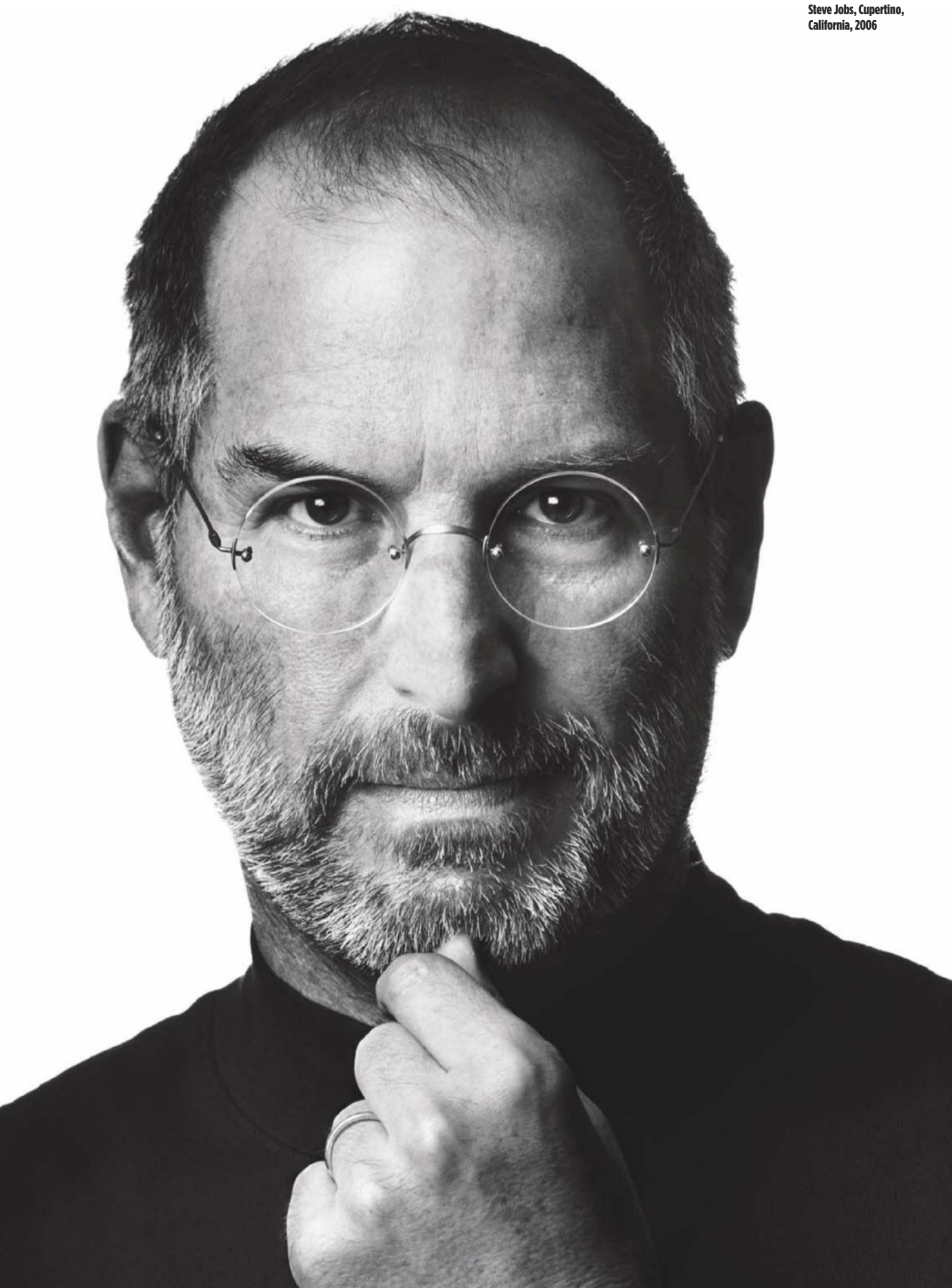
Left: Butterfly Man, 'Lost Diary Story', New York City, 1997

comfortable [for me] but behind that comfort there was certainly a massive amount of drive. In essence, I was interested in the creative side. I found the technical side annoying and painful to learn but I was interested in the creative – in the end image.'

Graphic and filmic

Before moving to the USA in 1970, Watson studied graphic design at the Duncan of Jordanstone College of Art and Design in Dundee, Scotland, and then film and television at the Royal College of Art in London. Thus he says the pictures in *KAOS* can be divided into three categories: graphic, filmic and a combination of both. 'A shot like a monkey with a gun







Left: Swimming Pool Polaroid, Mexico, 1977

Top right: Breaunna at fridge, Budget Suites Hotel, Las Vegas, 2000

is graphic in concept. Since I came out of the Royal College [of Art] as a director that played a big part in handling people. You come out and you want to direct, so handling people was a big side product of film school and how you communicate.'

He describes the combination of graphics and film together as 'where you're really putting everything in there. If you take the shot of Jack Nicholson (page 28) in the mirrors, that's a matter of handling him so he's not just in the mirrors looking at the camera but he's actually doing [something]; he's active. So that involves more of the film directing side of things and the mirrors come from the graphics and the concept side – it's a marriage of the two.'

He doesn't cite a specific creative inspiration. 'People ask: "Who is your favourite photographer?" I don't have one; I have a list of about 600 favourite photographers. I'm looking at work all the time. I spend a lot of my life going to museums and galleries. I would say that 75% of my collection of books, which is

extensive, is on art and paintings. So the inspiration that I'm pulling from all of these sources is great.'

Cameras and diversity

Watson began his career shooting with Hasselblad cameras and reveals, 'Then I did a lot of handheld Nikon work in the '70s for fashion – girls falling backwards in the water, stuff like that, and a lot of spontaneous stuff. As we entered the '80s, I came out of that and went back into Hasselblad, but then I was very quickly on to 4x5in. From 1984 to about 2006 I was working with 4x5in cameras; sometimes 8x10in. Then, when digital finally picked up and became viable, I [began using] a Phase One camera.'

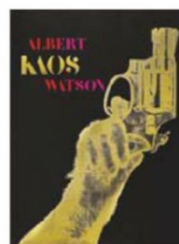
He has never had a problem with securing commissions. 'I just kept on working. I think it was because I was so diverse. I remember a fashion editor saying to me once: "You know, there's another Albert Watson." I replied, quite innocently, "Really?" He said, "Yeah, because there's a cover of *Rolling Stone* right now that I really liked of Jack

Nicholson." And I said, "Well, you know, I shot that," and he said, "I didn't know you did celebrities." We were so diverse that we were just always busy. It is quite mysterious to me that some photographers aren't more diversified.'

Watson continues, 'It's a weird thing; I'm not a celebrity photographer but I've done a lot of celebrities, so what does that mean? Annie Leibovitz is a celebrity photographer – that's essentially what she's done. She's started to branch out a little bit now, but it's quite difficult for her to leave her comfort zone. It was never difficult for me to leave the comfort zone because I didn't have one.'

Preparing the book

The book *KAOS* features many of Watson's iconic images, such as the double-exposure portrait of Mick Jagger and a leopard and his monkey project, which he admits was shot in just, 'one day plus two hours'. About preparing the book he reveals, 'We started with an edit of 800 [photographs] and then 745, then 720... We quite liked the process and there are quite a lot of Polaroids in there. The Polaroids were not important except that they give you an indication of where you were with everything – a ready reference. I used to do these Polaroid boards where you



KAOS by Albert Watson OBE (Taschen, ISBN 978-3-8365-2492-6, £1,150) is a major overview of his career; it includes his celebrity portraits, still-life imagery, commercial work, landscapes and personal projects from 1973 to 2016. Visit www.taschen.com.



➤ were able to do storytelling with the Polaroids and therefore you knew that you were covering it [all] on film and had covered the project.'

What can we expect if we bought the book? He explains, 'It's a book that you can sit [with] and you can refer to and use. I think a photographer could use it as inspiration and somebody else who's not into photography could use it

[as] a historical thing... There are a lot of people that I photographed [in the book] who are no longer alive, so that's the historical relevance.

Hopefully people will find it interesting, and a photographer would find it inspiring.'

About the digital age

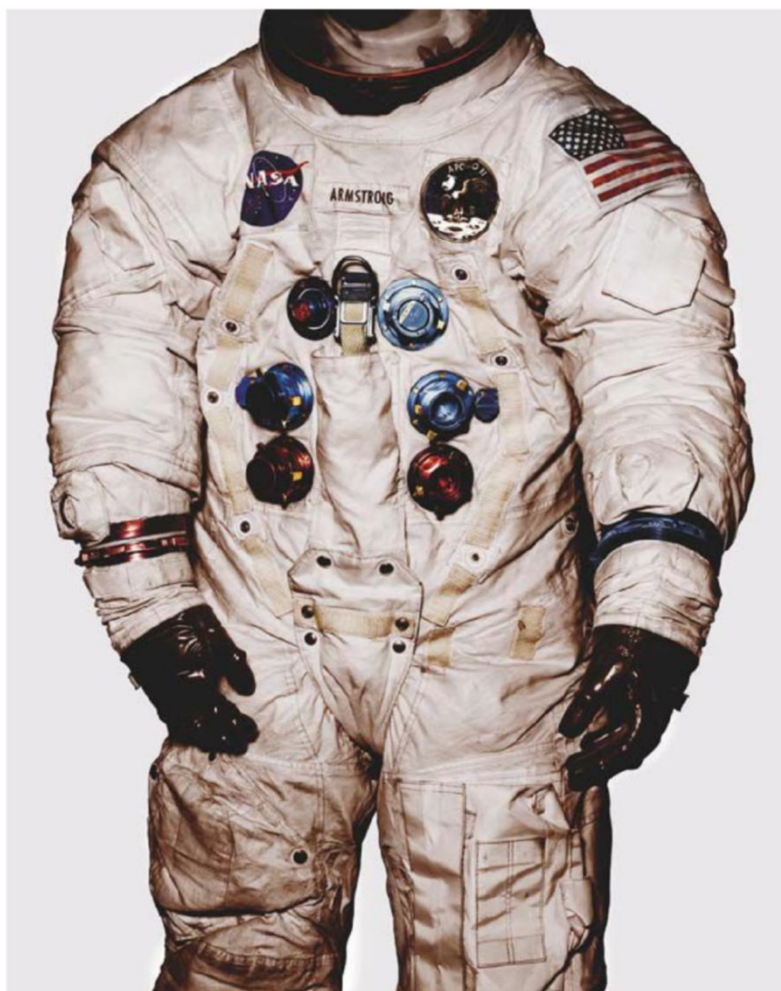
As one of the most respected photographers in the world Watson pulls no punches with his opinions

on the digital age. 'I'm a little bit surprised by some of the quality that's around because a lot of the stuff I see, especially in advertising, is being rescued by Photoshop. I greatly appreciate the fact that I went through an analogue, darkroom, old-fashioned photography system because when you get a guy like me dropping into a digital world I actually think we have an advantage.'

Above: Children's Ballet School, Beijing, 1979



Left: Moonlight, Neist Point, Isle of Skye, Scotland, 2013



Left: Neil Armstrong's Spacesuit from the First Moonwalk, The Smithsonian National Air & Space Museum, 1990

'Photographers don't retire – you just keep going; you come in every day and you work'

He adds, 'I sometimes speak to other well-known photographers, like a New York photographer who sends his prints to be made in Los Angeles. He'll say, "Oh, well I have a very good printer there, he understands what I like". And you go, "Pah!" That's just absolute nonsense because you should be doing your own prints. We do all our own prints in-house because of the control [you keep].'

Watson admits, 'I'm proud of the fact that I stayed [true to my style]... When I was doing a lot of the handheld Nikon in the mid to late '70s I was really super popular because the pictures were so "easy"; therefore all the magazines were working with me. As I became more proficient my initial training came more to the fore. I kind of left the graphics [approach] a little bit during the late '70s and early '80s, but by the mid to late '80s I returned to it in a much stronger way. I became much more obsessed about making strong images, and sometimes in the fashion business that could be a problem because the pictures were too "heavy". But I'm glad I stuck with it and that people liked it; photographers tend to be the people that like it the most.'

Future projects

Although *KAOS* includes some of his landscape images from a 2013 project shooting the Isle of Skye in his homeland of Scotland, Watson has more plans for this labour of love. He reveals, 'Right now I'm beginning to finalise all of the Skye pictures. I've put a few of them in this book but I'm now going to finalise a lot of them. There are probably about 60 to 70 very strong images. Then I'd always planned this nude project with [using] textures from Skye and I'm working on that.'

When I spoke to him, Watson was just about to jet off to China, and although he's 75 years old, he clearly has no plans to slow down. 'I'm still shooting – I've just finished a big project for Japanese *Vogue* and I'm doing one or two very big photographic projects in 2018. Photographers don't retire – you just keep going; you come in every day and you work.'



Born in Edinburgh in 1942 Albert Watson OBE is a celebrated photographer and filmmaker. His photographic work spans many genres; he also had a prolific spell directing TV commercials. *PDN* named him one of the 20 most influential photographers of all time. To find out more, visit www.albertwatson.net.



Morocco's unmissable 5

Captured by Louis Adams on a Nikon D7500. Discover his journey at secretescapes.com/nikon/morocco

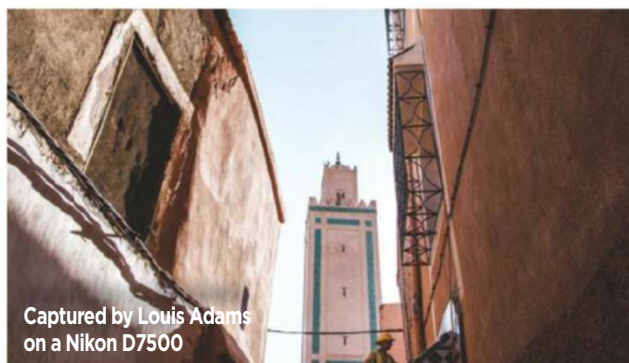
Morocco is an intoxicating land that beguiles any visitor with a heady myriad of colour, spice and unforgettable moments

No matter your photographic discipline, Morocco offers enough diversity to challenge any photographer. A wild sea of sand dunes ripple against the foot of High Atlas, where Berber villages cling to the mountainside and breathtaking views await those who climb to their dizzying heights.

Discover medieval towns that time seemingly forgot, before losing yourself in the medina of Morocco's glorious cities. Islamic curves and patterns dress the buildings above labyrinthine alleys that are a haven for street photographers. Hide in doorways, immerse yourself in crowds, get lost in the souks, and capture the energy and fascinating people that envelop the scene. In the north of the country, the cities have a distinctly European feel, where French colonial architecture and Art-Deco lines grace grand boulevards. It makes for a dizzying set of sights to try and capture.

Aside from packing all the necessary equipment, be aware of customs and taboos. Any trip to the feverish souks will tell you that everything has a price; don't be surprised if your street photography is accompanied with the doling out of a little change in exchange for a great portrait. It will most certainly be worth it. If you can, take a guide with you when exploring the mountains, and be prepared before venturing into the Sahara – it's a beautiful but hostile environment. Discover hand-picked beauty spots to introduce you to the Moroccan scene and inspire your own photographic journey.

Marrakech's medina



Captured by Louis Adams on a Nikon D7500

Immerse yourself in the labyrinthine warren of medieval streets, dodging donkey carts and the bustle of the souks. Head to a rooftop for shots over the Jemaa el-Fna, a frenzied menagerie of storytellers,

musicians, snake charmers and acrobats. The medina is a great place to hide, waiting for subjects to come to you. Explore the unique light of the souks and covered walkways – great shots hide behind every corner.

Chefchaouen



This effortlessly picturesque spot is becoming something of an icon – the instantly recognisable blue pearl of Morocco. Hidden under the piercing crags of the Rif mountains, this magnificently azure medina is a warren of cool alleyways that make for truly unique pictures. Head for the casbah for great views over the town.

Erg Chebbi



A vast collection of powdery sand dunes, Erg Chebbi is a remarkable landscape that positively glistens in an array of colours at twilight. Before the sun fully rises or sinks, the desert can get pretty cold. Arriving early and trekking fairly deep will help get those unspoilt dune shots – if you're using a tripod, find something like plastic cups to spread the load on each foot so you don't find it consistently sinking into the sands.

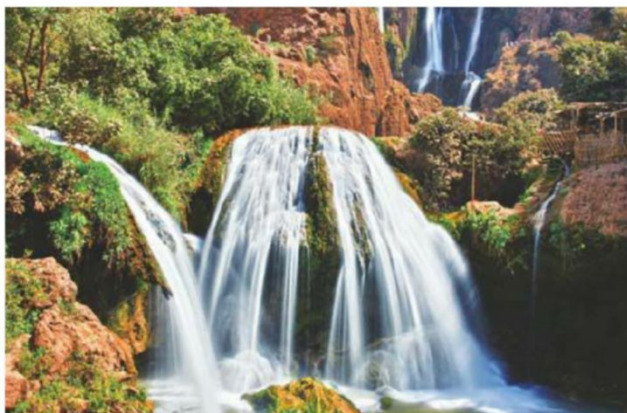
Assif Imnane valley



Captured by Ross Walker
on a Nikon D850

Head for the mountains and discover the remarkable Berber culture that shelters in the plains and steep slopes. A guide is highly recommended, providing access to this traditional way of life. Imlil is a fascinating town, offering a starting point for treks up to Tizi n' Tamatert. The towns are unique and the mountains steep, making for fascinating shots that require real effort to attain.

Ouzoud waterfalls



A seriously picturesque spot, the Ouzoud falls are a simply breathtaking scene. Three falls cascade and drop to a middle plateau, swirling outward once more in one single drop. Hop on a hand-pulled raft to get close to the roaring water, or climb the cliffs to a midway, elevated viewing platform. It's a great spot for lunch, too, so be sure to work up an appetite.

Inspired yet? Discover our journey



Nikon and Secret Escapes recently sent one aspiring photographer along with a professional to Morocco, to learn how to capture the perfect shot. Armed with the Nikon D7500 and D850, discover their own selection of unmissable photogenic spots. Follow their journey, with professional tips and tricks to help you get the most out of a Moroccan photography adventure.

secretescapes.com/nikon

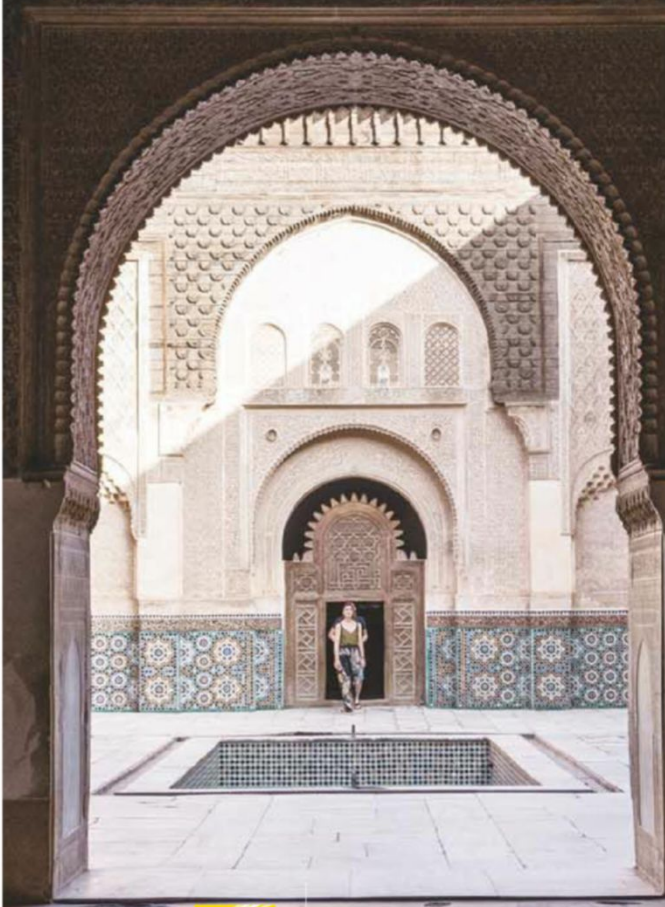
I AM NIKON

CAPTURE THE JOURNEY

**Stop dreaming,
start shooting.
Win a trip to Morocco
plus a Nikon D7500**

**Enter now to win a four-night stay in
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to ensure you'll return with a photobook
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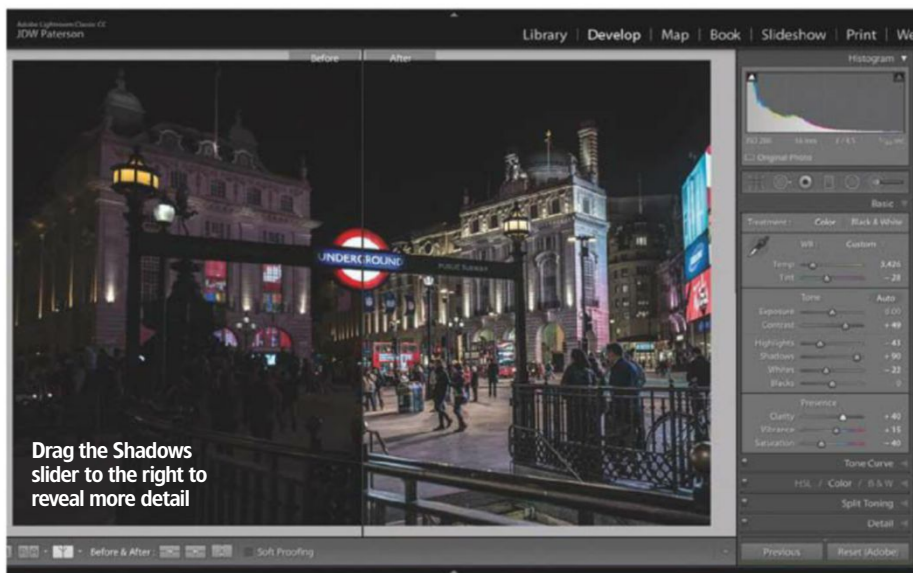
James Paterson

James is as skilled a photo editor as he is a photographer. His work has appeared in countless magazines and books, and in 2014 he was appointed editor of *Practical Photoshop* magazine. His subjects range from portraits to landscapes, architecture and underwater scenes. For James, Photoshop is more than just a work tool. Visit www.patersonphotos.com

Lightroom tips

For night photography

James Paterson shares his expertise on processing and enhancing night-time scenes using simple Lightroom techniques



2 Pull out shadow details

Often when shooting night photos it's necessary to underexpose the scene in order to preserve bright highlights. As a result the shadows can be very deep. But it's amazing how much detail the shadows can hold, especially in raw files. Increasing the shadows slider in the Basic Panel will help to tease out the details.

3 Remove bright spots

Wet surfaces can look great at night as they reflect the bright highlights in the scene. But watch for spots of water on the lens as they'll cause bright smudges in your photos. As a last resort, these can be removed using Lightroom's Spot Removal tool. Set it to Clone, then paint over the spot and sample from a similar clean area nearby.

1 Target the yellows

Sometimes a building illuminated with tungsten light will look overpoweringly yellow, even after fixing the white balance. When this happens you can try lowering the saturation selectively. Go to the Saturation tab within the HSL Panel, grab the target tool, then drag down over the yellow building. You can also use it to boost colours like the greens here.

4 Shoot in raw

When you use your camera's raw format you are able to set White Balance after the fact. Raw files also hold greater information in highlights and shadows than JPEGs. As such, the benefits of raw are especially relevant to night photography, where mixed colour temperatures, bright highlights and deep shadows are the norm.



5 Start with the basics

When editing your night photos, begin in Lightroom's Develop Module with the Basic Panel. With city scenes like this one, we usually need to lower the highlights and increase the shadows to balance out the contrast. A boost in Clarity can also help to crisp up details.



6 Sync your exposures

In any situation when the exposure is tricky to work out, it pays to bracket your exposures. When editing your images you'll want to sync global adjustments like white balance across the entire set. To do this, edit one photo to your liking then Cmd/Ctrl+click to select the others and click the Sync button. Check All, then hit OK.

7 White balance trick

If you find it hard to fix white balance, try this. Go to the Basic Panel and temporarily increase both Saturation and Vibrance to +100. Next adjust Temperature until the image looks neither too blue (like this) or too yellow. Do the same with Tint – aim for a good green/magenta balance. Once done, double-click to reset the colour sliders.



Top tip for correcting white balance in Lightroom

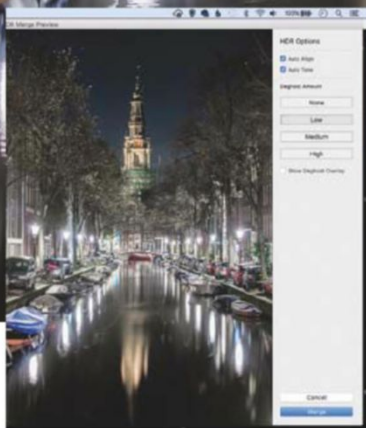


Make the most of plug-ins that are free in Lightroom

8 Create star trails

Images of star trails let you capture the Earth's movement as wonderful circular starry patterns. To create them, you need to take a series of shots over the course of an

evening. These can be blended with an excellent Lightroom plug-in called LR/Enfuse. It's free to try, and if you want the full version you can make a donation on their site.



Use Lightroom's HDR merge feature to combine bracketed exposures

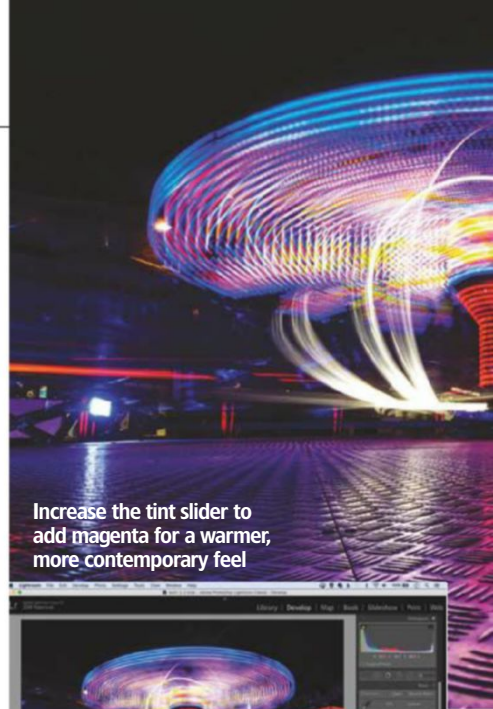
9 Merge to HDR

HDR photography is ideal when the camera's dynamic range struggles to record detail in highlights and shadows, which is often the case at night. We can shoot two or more bracketed exposures using a tripod and then merge them using Lightroom's HDR Merge feature. To combine the set, highlight them then right-click and choose Photomerge>HDR.

10 Correct noise

Night photos will often display grainy noise – especially in darker areas. The tool for fixing this is the Noise Luminance slider, found in the Develop Module's Details Panel. Zoom in close and increase Luminance until the noise disappears. Don't push too far; it's better to be slightly noisy than overly mushy.

Use the Noise Luminance slider to reduce noise



Increase the tint slider to add magenta for a warmer, more contemporary feel



11 Add magenta tint

Night scenes can often look quite cold and blue, so this could be a time to try out a creative white-balance tweak. A slight increase in Magenta can look good as it gives the scene a warmer feel. Simply drag the Tint slider to the right slightly to add a touch of magenta.

12 Fix colour fringing

Chromatic Aberration is usually most apparent in areas of extreme contrast where a bright edge meets a dark one. As such, colour fringing can plague night photos of city scenes because of the combination of bright lights and deep shadows. It's easy to fix – head to Lightroom's Lens Correction Panel and check 'Remove Chromatic Aberration'.

13 Sharpen selectively

When sharpening night scenes you run the risk of amplifying noise. Counteract this with the Masking slider in Lightroom's Detail Panel. Hold Alt and drag Masking and you'll see a black & white view. The black areas will be protected from sharpening, so drag until it's restricted to the areas you want.

Adjust the Masking slider while holding Alt to reveal the areas restricted to sharpening





Convert to monochrome to simplify cluttered scenes

14 Boost bright stars

Lightroom's new Range Mask feature (available within the Adjustment Brush, Radial and Graduated Filter) is very good at boosting stars. Simply grab the Adjustment Brush, load it with positive exposure and paint over the sky, then set Range: Luminance and restrict the effect to the highlights, thereby boosting the bright stars while preserving the surrounding dark sky.

Boost starry skies with Range Mask feature



15 Convert to mono

A punchy monochrome conversion can work beautifully with night-time photos. Black & white is a good simplifier and is effective in scenes with mixed colour temperatures or with clutter. Try Lightroom's array of inbuilt B&W Presets, found in the Preset Panel to the left of the Develop Module.

16 Dark frame subtraction

Long exposures cause the camera's sensor to heat up, which results in thermal noise. Either turn on your camera's Long Exposure Noise Reduction or shoot a dark frame by fitting your lens cap for an exposure of the same length. Dark frame subtraction cannot be done in Lightroom, it needs to be carried out in Photoshop by blending the dark frame using the Subtract blend mode.

17 Shooting stars

To shoot stars you'll need a high ISO of 1600 or more combined with a wide aperture such as f/4 and a shutter speed of around 30secs. With these kind of exposure settings, noise reduction in Lightroom is essential.

Noise reduction is essential when shooting at high ISO settings to reveal the stars at night



18 Vibrance

Often low-light scenes are dominated by one colour, such as the blue twilight sky here. In this case boosting colour with the Saturation slider may overcook the blues. Instead, use the Vibrance slider. This targets the less-saturated colours in the scene while preserving those that are already strong.



19 Underexposure and noise

Under the light of the full moon you can shoot long-exposure landscapes that look as though they were taken during the day. A bulb exposure is essential. Do not underexpose the scene. Rescuing underexposed images results in lots of noise, so better to get it right in-camera, even if it means using a higher ISO.



20 Pull out stars

If you want to pull out extra detail in your starry night-time skies, try increasing Clarity in Lightroom. Don't push it too far (no more than 50) though as this will introduce edge haloes in the image. Clarity can also be applied selectively, so if you want to preserve contrast elsewhere then paint in Clarity using the Adjustment Brush or Graduated Filter tools.



Night race



At a glance

£3,499 body only

- 45.7MP full-frame FX CMOS sensor
- ISO 64-25,600 (expandable to ISO 32-102,400)
- Up to 9fps with EN-EL18b battery in MB-D18
- 3.2in tilting touch-sensitive LCD
- Dual card slot (XQD+SD)
- 4K video

The Nikon D850 is an astonishing performer, but how far can it be stretched in a challenging low-light scenario? **Michael Topham** pushes it to its limits



For this panning shot I increased the sensitivity to ISO 20,000. A few years ago this sensitivity would have been deemed unusable Nikon D850, Nikon AF-S 80-400mm f/4.5-5.6G ED VR, 1/160sec at f/4.5, ISO 20,000

You wait weeks for your chance to shoot an event you've been looking forward to, only to have your high hopes ruined by the weather. It's a situation most of us can say we've experienced at some point and for me, today seems to be that day. As my eyes adjust to the fading light and I attempt in vain to find the optimum wiper setting to clear the windscreen of persistent drizzle, I consider making a U-turn and heading home. Not one for being defeatist, I carry on driving into the gloom, spurred on by the thought that tonight I have a date with one of the best DSLRs ever made. I am referring to the Nikon D850 – a camera I reviewed a couple of months ago and came to the conclusion is an all-round sensation. Since writing my verdict, I've been itching to get back out with it again to shoot something that involves putting all of its key strengths to the test simultaneously.

As I hand over my ticket for tonight's Britcar 'Into the Night' race event at Brands Hatch, it dawns on me that I've photographed numerous motorsport events in daylight, but never before have I attempted it at night. Unperturbed by the challenge, I get toggled up in my winter jacket before hastily attaching the MB-D18 battery grip loaded with an EN-EL18b battery pack to the underside of the body. This combination gives the D850's frame rate a healthy injection of speed and increases it from 7fps to 9fps. It's not just the added speed I want though; the grip's larger-capacity battery increases the shooting stamina from 1,840 shots to over 5,000. Briefly holding the shutter with the drive mode set to continuous high (CH) suggests all is working well, though I notice the shutter has a slightly deeper sound to it with the grip attached than when it's not. Tonight is the first time I've had the chance to use the camera with the battery grip, but already I'm starting to appreciate how it's transforming the handling experience with my large hands and the brute that is the Nikon 200-400mm f/4 G VR II AF-S ED coupled to the front of the body.

ALL PICTURES © MICHAEL TOPHAM

'The grip's larger-capacity battery increases the shooting stamina from 1,840 shots to over 5,000'

Having a plan

Before any photo assignment I like to have a clear objective in my mind of what I want to achieve. By setting a goal or target, I find it helps me to focus on what it is I'm setting out to do as well as think more imaginatively and creatively about the images I'm about to take. Tonight's objective is all about discerning how well the D850's autofocus responds in the dark and how far its sensitivity can be pushed before noise severely impacts the level of detail to the point I wouldn't want to take it higher.

As I walk to the famous paddock hill bend, I check through the menu settings one last time to make sure I'm happy with how the D850 is setup. I don't typically shoot motorsport in raw as I find the large file sizes can fill up memory cards too quickly and interrupt the shooting process as data is being written. Tonight though I need the raw files so I can eke out the best image quality the D850 has to offer. Glancing at the top plate after setting the image quality to NEF (RAW)+JPEG fine indicates I'll be able to shoot 420 frames to my 64GB XQD card, but this is next to nothing when you're shooting continuously at 9fps and have a camera in your hands that's capable of rattling off more than 20 frames at this speed before its buffer needs a breather. Reducing the quality of JPEGs to normal and their image size to 11.4MP increases the number of frames I can record to nearer 600. Most importantly, I'm recording uncompressed raw files at maximum resolution (45.7MP), which will offer good scope for cropping later at the processing stage. If you're wondering why I'm opting to shoot JPEGs as well it's because I always like to have an easily transferable file handy that I can ping across to my phone and share in an instant. The D850 does support in-camera raw processing, but I've found there's no time to locate a raw file and process it when you're working quickly under pressure.

Before the main event of the night that'll see a mishmash of Aston Martins, Ferraris, Porsches and McLarens battle it out on track, I get a chance to practise on a slower race of old Minis. Already I'm up at ISO 3200, which is giving me a 1/400sec shutter speed at f/4. I'm anxious about the fact I haven't got a faster zoom lens in my bag and in an ideal world I'd be using a 400mm f/2.8 right now. I recall the D850 performing well at ISO 3200 and ISO 6400 when I last used it, but with the last of the day's light disappearing fast I know I'll have to push above and beyond these settings if I'm to be successful tonight. The penultimate race is a great way to get warmed up to the action and after some experimentation with various AF settings, my best success is had using the D850 in continuous AF (AF-C) with the AF area mode set to its 25-point



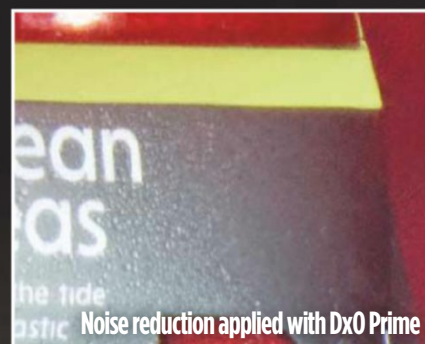
The D850 didn't suffer in any way as a result of getting absolutely drenched during the shoot

dynamic-area setting. I'm opting to keep the AF area centrally positioned and hold the AF-ON button with my thumb and keep it depressed as the cars enter the frame. As I track the cars I squeeze the shutter and shoot bursts of 10-12 shots at a time, at 9fps. This back-button focusing technique works a treat for high-speed action and though I never usually like to chimp, I can't resist taking a look at a few of my early results on the sensationally crisp rear screen. Early inspection shows that shots are sharp and I'm mightily impressed that I'm experiencing no difficulty swiping through shots and inspecting the level of sharpness using the touchscreen despite it being covered in rain droplets.

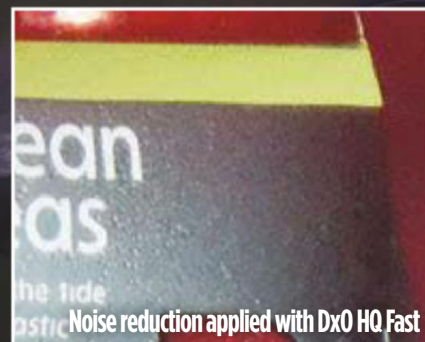
Raising the ISO

The early drizzle has now turned to persistent rain and as photographers around me attach their makeshift covers in an attempt to keep their cameras dry, I realise I don't have anything suitable to shield the D850. My low-light test has all of a sudden turned into a brutal test of the D850's weather-sealing in what have become the most abysmal conditions I've ever attempted to use a DSLR. Wet, cold and despondent, I'm glad to hear over the tannoy that the race I've come to

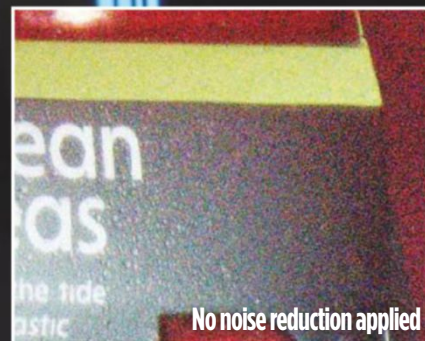
photograph is about to start. The sensitivity is now up at ISO 6400, but my 1/50sec shutter speed is only any good if I'm prepared to bring some motion blur into panning shots. As I edge towards ISO 25,600 by holding the intuitively positioned ISO button and flicking the rear dial, I pause briefly at ISO 16,000 to freeze a few cars in their tracks as they approach head-on. The autofocus system is doing a remarkable job keeping up. The blinding headlights, speedy subject and shockingly poor lighting conditions would be enough to throw many AF systems into disarray, but thankfully the D850's is up to the task. Several hundred shots later, I've spilled over to my second memory card and I'm up at ISO 25,600 in an attempt to capture some of the spray of the cars as they pass side-on. The sharpness looks acceptable but I'm unable to judge from the screen how well the sensor is responding to being pushed so close to its expandable 'Hi' ISO settings. Soaked to the skin and having shot over 1,500 images during the evening, I decide to call it a day. Intrigued by how much power I've used, a glance at the battery info tells me the MB-D18 has 65% charge remaining and in all my years of taking photographs, I don't think I've ever exposed a DSLR to such inclement weather. The D850 hasn't faltered once all night and



Noise reduction applied with DxO Prime



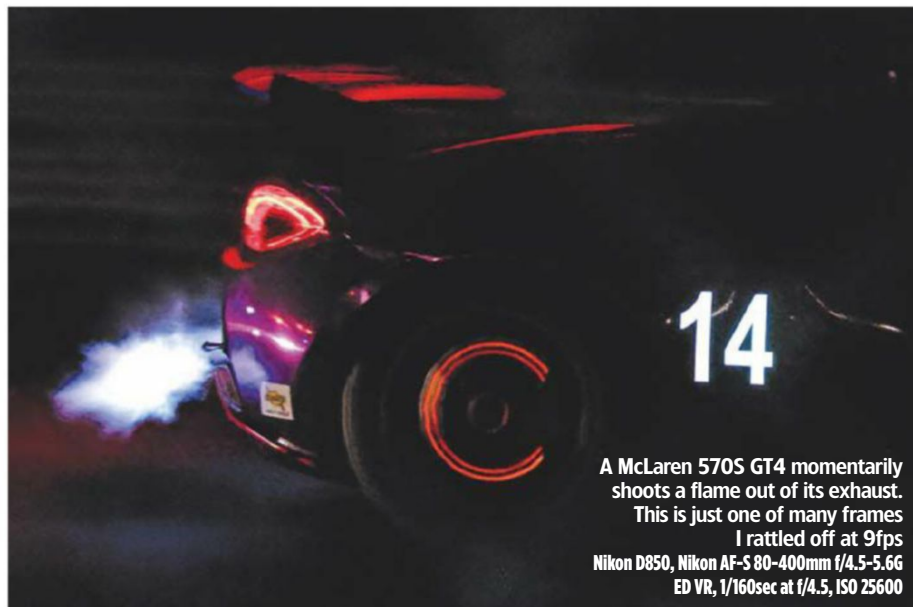
Noise reduction applied with DxO HQ Fast



No noise reduction applied

The effectiveness of applying noise reduction to files using DxO Photolab is clear to see in the 100% magnified views above Nikon D850, Nikon AF-S 200-400mm f/4 G VR II ED, 1/250sec at f/4, ISO 16000

Tips for shooting at night



A McLaren 570S GT4 momentarily shoots a flame out of its exhaust. This is just one of many frames I rattled off at 9fps
Nikon D850, Nikon AF-S 80-400mm f/4.5-5.6G ED VR, 1/160sec at f/4.5, ISO 25600

Into the night races like the one I attended at Brands Hatch are often held towards the end of the motorsport season and are well attended by petrol heads and photographers who want to give their ability a tough test. As photographic challenges go, shooting fast cars in darkness might seem a bit daunting, but there are a few things you can do to make sure your visit is successful. If you're going to be shooting with a long zoom lens, mounting your camera setup to a monopod is essential. It'll give you the support you need to banish handshake and offer flexibility for panning. A small torch is useful when you're swapping lenses and memory cards in the dark and I suggest always arriving as early as possible to give yourself plenty of time to adjust to the lighting conditions. You'll likely find you take a lot of shots to get the shot you really want and in the case of the image above, I took nearly 600 shots before I captured the blue flame out of the exhaust.





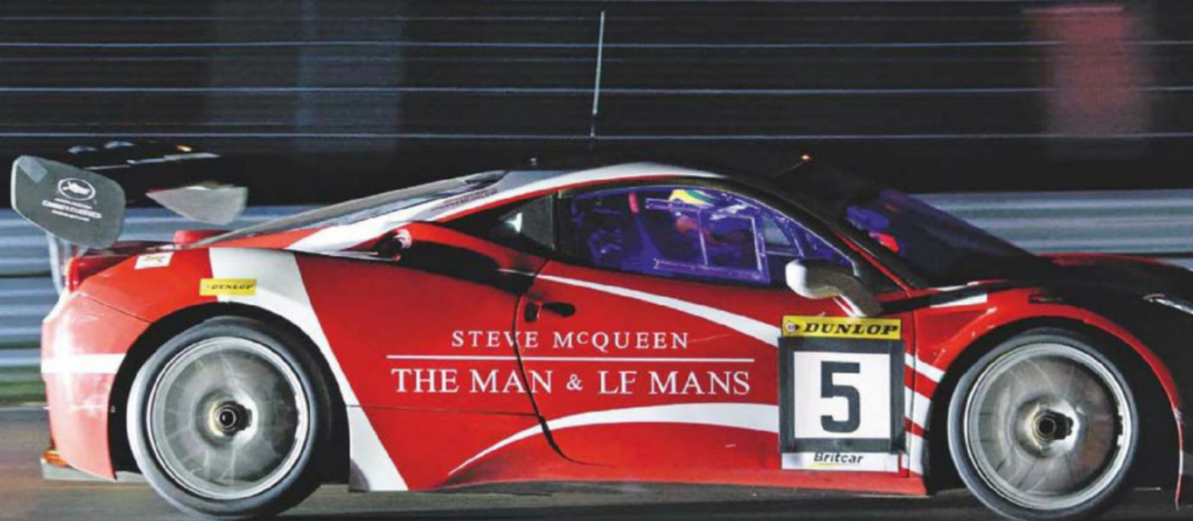
Effective results can be achieved beyond ISO 12,800 right up to ISO 25,600 Nikon D850, Nikon AF-S 85mm f/1.4 G, 1/5000sec at f/2, ISO 20000

I'm bowled over by many things, not least its resilient build quality and its remarkably effective weather sealing.

The following morning I start inspecting images and begin the editing process. Five-star rating my favourites late last night using the D850's handy Fn2 button makes it easy to filter out the best from my large set and as I load my first few images into DxO's PhotoLab software to reduce noise using its effective Probabilistic raw image enhancement (PRIME) denoising engine, I'm reminded of how well the D850's sensor handles noise in early shots captured at ISO 3200. Though noise is evident, it's not what I'd class as insulting and is quickly remedied using DxO's HQ (fast) noise reduction. Inspecting low-light shots captured at ISO 6400 reveals that the level of random noise amplifies, but thankfully this is where DxO's superb PRIME noise reduction algorithms come into play and it reduces traces of fine luminance and chrominance noise effectively while retaining extraordinarily high levels of detail. The level of detail is so impressive I can even make out water droplets on some of the cars' paintwork. In my review of the D850 I made a bold statement saying I wouldn't fear pushing



‘Pushing higher to ISO 16,000 is where I notice a purple tinge starting to appear in dark shadowed areas’




to ISO 12,800 when it's needed, and the images I'm inspecting confirms this. Yes, there's noise at this sensitivity setting, but with DxO's luminance noise reduction slider set to a value of around 40, very acceptable results are being achieved. Pushing higher to ISO 16,000 is where I notice a purple tinge starting to appear in dark shadowed areas, which is more obvious when the noise reduction is turned on and off a few times. What I'm really taken back by at ISO 16,000 though is the way I'm still able to clearly make out the graphics and sponsorship signage on the cars. To be able to resolve such great detail at such a high sensitivity setting is quite phenomenal and really hits home how far high-resolution sensors have come in recent years. Filtering out shots taken at ISO 25,600 also reveals staggeringly good detail. Provided that the

exposure is nailed at the point of capture and doesn't need to be pushed too far, this high sensitivity setting can certainly be used to keep the shutter speed high and capture subjects sharp. Although many of us are guilty of being critical of noise creeping into our images there is one important thing to remember – it's better to have a picture that's sharp with a bit of noise than one that's blurred because you were too afraid to raise the sensitivity and push the sensor to its limit.

Second time lucky


Although I'm satisfied with my results I can't resist a second visit to Brands Hatch to photograph day two of the night race. Mercifully, I'm presented with dry shooting conditions and take a different approach by shooting with my Nikon AF-S Nikkor





The level of detail the D850's sensor resolves at high sensitivity settings is remarkably impressive

Nikon D850, Nikon AF-S 80-400mm f/4.5-5.6G ED VR, 1/80sec at f/4.5, ISO 25600



Raindrops can play havoc with the operation of some touchscreens, but that's not the case with the D850

80-400mm f/4.5-5.6G ED VR lens on the inside of Druids bend – an area where you can shoot from close distance and is ideal for shooting red-hot brake discs glowing in the dark. Now that I know how far I can push the D850's sensitivity, I don't hold back and begin shooting at ISO 12,800. Within half an hour the last of the day's light disappears and I'm back up at ISO 25,600. The difference tonight is that I'm shooting much more confidently, knowing I'm on the limit of the D850's low-light capability, but will be able to produce good results at this sensitivity setting with some careful processing. A couple of thousand shots later and as the race draws to a close I can't resist pushing past ISO 25,600 to the expanded ISO settings in order to get a better idea of what is possible. After firing off a few bursts at H.07 (ISO 40,600) and H1.0 (ISO 51,200), the race finishes and I return home in good spirits, excited to review, rate and edit another set of strong images.

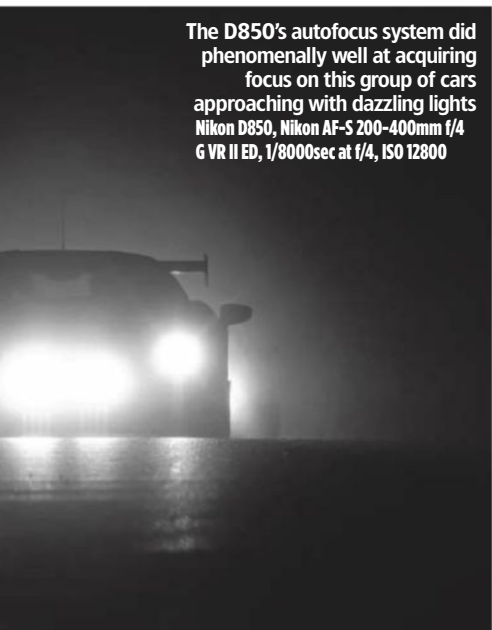
My second shoot turns out to be far more successful than the first. I put a lot of this down to the cars racing closer together, which not only illuminates the cars better, but also helps to create a stronger contrast between the shadows and highlights. By increasing the luminance value slightly from its default setting of 40 using DxO's PRIME denoise slider, the texture of the noise at ISO 25,600 is brought under control and the purple tint instantly vanishes. With curiosity getting the better of me, I move on to inspect the shots captured in the camera's extended ISO settings and find that a couple of frames at ISO 40,000 are worth editing. To my amazement these images haven't turned to mush and there's just enough detail in the file that I can make out the car race number and sponsor stickers. The time I spend applying noise reduction to images taken above ISO 40,000 turns out to be a bit of a waste of time. The level of noise becomes so imposing at H1.0 and H1.2 that I

wouldn't rush to use them again and would suggest other users of the D850 stay well clear unless there's absolutely no other option.

Conclusion

It's hard to put into words how well the D850's high-resolution sensor performs in low light. Phenomenal, remarkable and outstanding are the first words that spring to mind after spending an entire weekend using the camera and working meticulously on its files. The level of detail it preserves at high ISO really has to be seen onscreen at close magnification to be truly appreciated and after examining and processing thousands of raw files through DxO PhotoLab, I've drawn a conclusion that I wouldn't shy away from pushing the D850 as far as ISO 25,600 again if I found myself in a similar situation. Understanding how far a camera's sensor can be pushed, whilst still being able to achieve acceptable and usable results, is an extremely important thing to know when you're being challenged in low light or find yourself shooting a subject that demands a fast shutter speed.

In the case of the Nikon D850 though, it's not all about how well its sensor performs in low light, it's about the way it amalgamates the perfect blend of resolution, speed and performance. If I could dream up my perfect camera, the key things I'd want it to do well would be to resolve a high level of detail, handle noise admirably, focus responsively and shoot quickly. The D850 places big ticks in all these boxes and a long list of others, making it one of the most versatile DSLRs I've had the privilege to use. There will be some who argue it's more cumbersome than some mirrorless alternatives, which is something I can't disagree with, but excluding mirrorless cameras from the equation, the D850 is a true workhorse that stands out in a league of its own. I have no doubt that it'll be long remembered as the DSLR that hit the perfect sweet spot. 



The D850's autofocus system did phenomenally well at acquiring focus on this group of cars approaching with dazzling lights

Nikon D850, Nikon AF-S 200-400mm f/4 G VR II ED, 1/8000sec at f/4, ISO 12800

Canon's Utsunomiya factory, where all of its high-end L series lenses are built



Canon fire

To celebrate 30 years of the EOS system AP Editor **Nigel Atherton** was given a privileged peek behind the scenes at the Canon EF lens factory in Japan

Over the past 30 years Canon has produced 90 million EOS cameras and 130 million EF lenses. It's an astonishing figure which vindicates Canon's decision back in the 1980s to abandon its popular FD mount in favour of the new electronic EF mount, rendering its then-entire, existing system obsolete at a stroke. Canon's subsequent conquest and domination of the 35mm SLR market, followed by the DSLR market, is entirely due to that move, because the new mount laid the foundations for all the groundbreaking technology that followed.

To celebrate this milestone, AP was one of just two UK and four German publications invited to visit Canon's global headquarters in Tokyo and tour its Utsunomiya lens plant, where its L-series lenses are made.

Canon's Utsunomiya lens factory was built in 2005, and lies around an hour north of Tokyo by bullet train. It's an imposing grey, low-rise slab of a building, surrounded by manicured lawns and car parks, all of which appear to be

unblemished by even a speck of dust. Adjacent to the factory, on the same site, is the lens laboratory, where the research and development into new products takes place. We wouldn't be visiting there!

A warm welcome

Three flags flew at the factory entrance: those of Japan, Germany and the UK, in our honour. At the entrance the factory's senior management stood in line to greet us. The Plant Manager, Kenichi Izuki, who is responsible for the smooth running of the factory and its approximately 1,700 employees, led us to the meeting room where we were introduced to the brains behind Canon's EF lens programme. Finally we donned our stripy jackets and soft shoes and passed through the security doors to where all the magic happens.

The business of designing and manufacturing lenses is an incredibly exacting process. That's no surprise, but just how exacting is something that you might find difficult to get your head around. Canon's 4K/8K broadcast lenses, for example, are built to a tolerance of

within 30nm, or 30 millionths of a millimetre. To put this into perspective, if you could enlarge a polished lens element to the size of the Maracanã Stadium in Rio de Janeiro, the deviations in surface accuracy would have to be less than the thickness of a plastic bag!

But we're getting ahead of ourselves. Every Canon lens starts life not in the factory but in the R&D labs across the road. Indeed before even that happens, there is the market research conducted by the Business Planning Department at Canon's Tokyo HQ, into what is required by the customer.

The design phase

So where do the ideas for new lenses come from? I posed this question to Canon's senior lens designers, Manabu Kato, Tetsushi Hibi and Seiichi Kashiwaba.

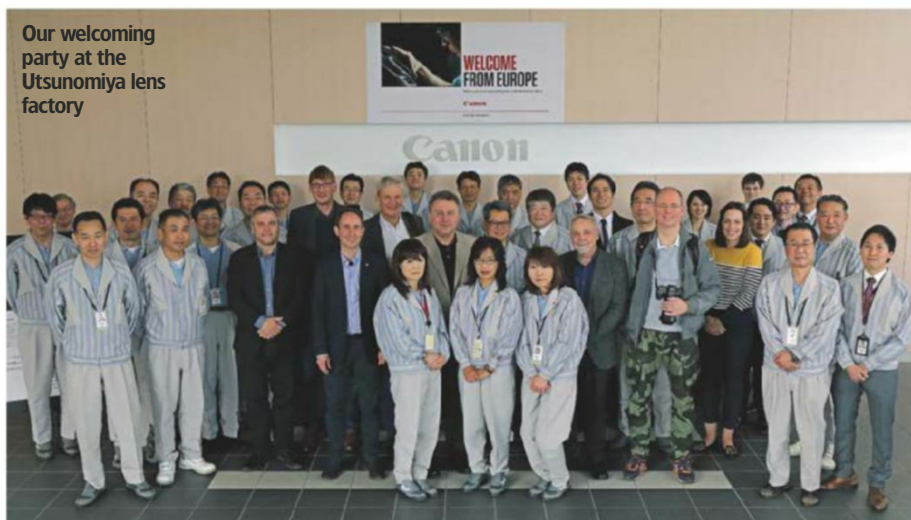
'We have an ideal lens, as a vision, for each of the categories that we operate in,' they explained, through a translator. 'We also spend a lot of time listening to our customers, and this lets us know what sort of things they are looking for. At the same time we look at the



Kenichi Izuki, the Plant Manager of Canon's Utsunomiya factory



Our welcoming party at the Utsunomiya lens factory



technology we have in house, and we identify where the gaps are between what we would like to do and what we can do. That is the engine that drives our technological development.'

Once the Business Planning Department are satisfied that there is a market for a lens, and that it's technically achievable and economically viable, the head of Canon's lens division, Naoya Kaneda, gives the green light for the concept to go into the product design phase.

Computer software is used in their design process, but rather than work with existing off-the-peg applications, Canon has built its own software. 'We felt that we could do better using our own in-house expertise,' says Mr Kaneda, frankly.

Designing a new lens isn't just about deciding how many elements it will have and what shapes they'll be, but also the composition of the glass itself. Glass can be made from a variety of metallic oxides and other ingredients. The designers have extensive knowledge of the chemistry and composition of different types of glass and the effect this has on optics. Combining different types of glass elements within a single lens to achieve the desired result is part of the skill of lens design.

According to Kengo Ietsuka, manager of the Business Group, it's relatively easy to make a high-quality lens if you don't have to think about the size and weight of the lens, but for Canon the challenge is about achieving a balance of size, weight and quality. But for Shingo Hayakawa, Kaneda's deputy, the biggest challenge when producing L-series lenses is the extra durability that they require. 'It's one of their defining qualities,' he says.

Since none of the machinery required to make a new lens has been built yet, the early prototypes are made largely by hand.

'If it includes a new piece of technology that we're introducing for the first time, such as when we developed the IS system, we'd do a partial creation of the prototype to see how it performs, and fine-tune the

specifications accordingly,' explains the team. 'If we're confident about the design and how it will work we will try to create as finished a prototype as possible.'

In these early stages there is constant back and forth communication between the lab and the factory. 'We work closely with the plant to overcome the challenges that we will face in manufacturing the lens,' continue the designers. 'We don't just give the factory a design and say, "Here, make this." For example, when we developed the EF85mm f/1.4L IS USM, the biggest challenge was that the IS unit for this lens was very large; so it took longer to create than average.'

The next steps

When a prototype is created it does not go into production straight away. 'The production timeline for a lens is a matter of years rather than months,' explains Mr Kaneda. 'Once we have designed the lens and made the prototype we spend a lot of time testing and listening to feedback from professional photographers. We have testing areas where minute adjustments are made to the optics, and we also have an area where we hit the lenses and drop them on the ground to ensure that the final products have the highest standards of durability. For example, if you compare the Mark I of the EF24-70mm f/2.8L USM lens with the Mark II version, you will see that the durability has been greatly increased.'

Before a new lens goes into production, the machinery to make it first has to be built, and here Canon also has its own in-house team – the Production Engineering department. According to Plant Manager Mr Izuki the biggest technical challenge for the manufacturing team is achieving consistency. 'All the lenses that come off the line will be within a specified level of tolerance, but making each one as close to identical as possible is very difficult. We strive to achieve as little variation between lenses as possible, so we do a

Aspherical lenses



Aspherical lenses use complex shapes to suppress various aberrations. Generally designed using a computer, these elements can't be produced using the same rotating machinery as the regular elements. Canon uses three methods to produce aspherical lenses, depending on the characteristics required. The first is by grinding the lens in the conventional way. This is time consuming and requires very precise control of the machine, but it is still the method required for larger elements. The second is by fixing 'bumps' of glass onto a regular element; and the third is by Glass Moulding. GMo Aspherical lenses are lenses that have been heated, shaped in a mould and then cooled. This method is the most sophisticated and has to take into account changes to the lens's shape and characteristics as it cools. Unlike many lens manufacturers Canon produces its own GMo aspherical lens elements in house, using its own machines.

lot of fine-tuning on the production line.' Canon has around 90 lenses in its current range, and it would be impractical to be making all of them all of the time, so Mr Izuki is given a production schedule which specifies how many of which lenses need to be made over the next month. 'There are some lenses, such as the TS-E tilt/shift ones, where there is a team working on a special line spending two hours a day making these. But this is the exception,' he says. 'Mostly we have parallel lines running continuously all the time.'

Making the lenses

There are five stages to turning a lump of glass into a Canon lens. Stage 1, Rough grinding: this turns the lens from a rough tablet of frosty glass, called a 'cake', into a curved surface of a specified dimension. Stage 2, Smoothing: where the lens is fine ground to the proper degree of roughness and surface curve, using a curved drum embedded with diamond pellets. Stage 3, Centering: at this stage the optical axis of the lens is adjusted, by fine-tuning the curvature of the lens. Stage 4, Polishing: here the surface of the lens is polished using a rotating polyurethane pad until the lens becomes transparent. Stage 5, Inspection: the lens is tested and inspected to ensure it meets the required standard.

With most of the smaller, non-aspherical lenses, this process is now automated using a machine designed and built by Canon's Production Engineering division. This machine cleverly measures every lens that goes down the line and applies optical corrections as it goes. During our visit we watched a machine that produces elements for the EF16-35mm f/2.8L III USM in around 30 minutes.

But the more specialised lenses, like the super-telephotos and the 4K/8K broadcast lenses, are still made largely by hand by craftsmen with decades of experience. Craftsmen like Toshio Saito, who has gone beyond the title of 'meister' to that of 'Takumi', or master craftsman, for his 30 plus years of lens polishing experience, and now heads that department. Indeed, most senior staff seem to have spent their working lives at Canon, which perhaps explains the palpable sense of loyalty and pride in everyone we met.

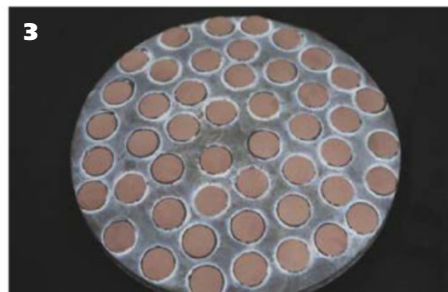
Canon's obsession with perfection and fine detail was brought home to me when I happened to glance at one of the six framed prints on the wall of our meeting room and recognised Brighton's West Pier. 'That's a coincidence, I live in Brighton,' I said, before realising that it wasn't a coincidence at all. Six guests, six prints, each one representing one of our home towns. At that moment it became clear why Canon has managed to achieve such a global domination of the camera and lens market for so long.



Small autonomous robots are programmed to tow the cages of components to various parts of the factory, following lines on the floor



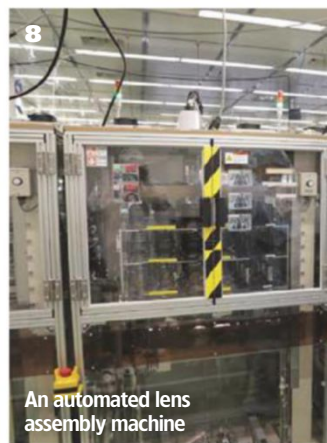
A lens element in its raw state, known as a 'cake'



A diamond plate, covered with diamond discs, for the grinding, shaping and smoothing of elements



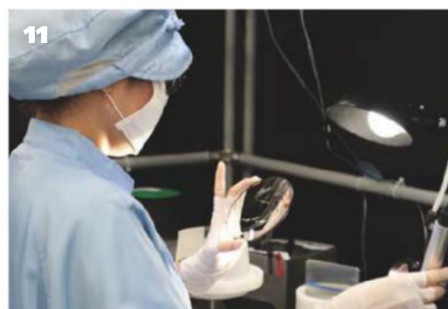
The assembly line where smaller, non-aspherical lens elements are automatically ground, shaped, centred and polished



An automated lens assembly machine



A worker assembling one of Canon's £11,000 EF600mm f/4L IS II USM telephoto lenses by hand



The front element for an EF600mm f/4L IS II USM lens is checked before being fitted into the lens



Canon's aspherical lenses are made here using a special glass moulding, or 'GMo', process



The lens inspection area where finished lenses are quality tested using Canon's own charts



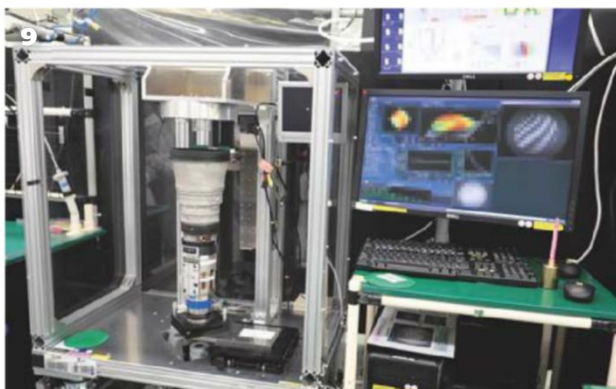
Toshio Saito, the lens polishing 'Takumi' who has been polishing lenses for Canon since 1981



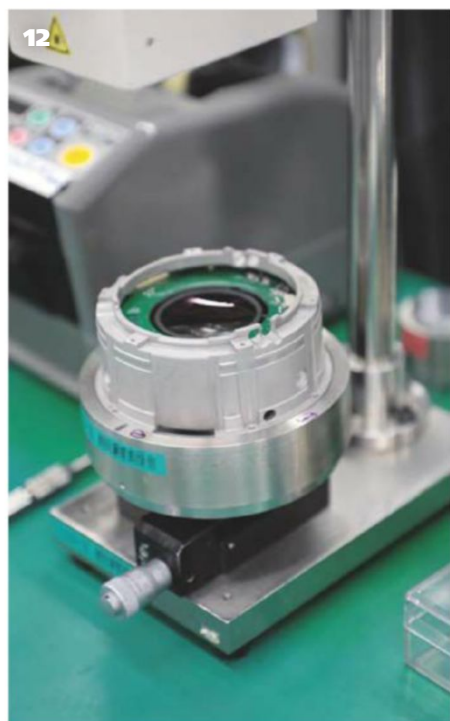
It requires over 20 years of experience to master the art of lens grinding and polishing



An element is smoothed, before being centred and polished. The water is purified and recycled



An EF600mm f/4L IS II USM lens is checked by computer to ensure it is within performance tolerances before the outer casing is added



Canon's ground-breaking image stabilisation unit



Attaching the Image Stabilisation Unit to a lens

Interview with a Takumi

Five minutes with Toshio Saito, Canon's master lens craftsman



MR SAITO joined Canon in 1981 as an apprentice and did various jobs before finding his niche as a lens polisher. As the Takumi, he oversees all lens polishing at the plant (they polish approximately 5,000 lens elements per day at Utsunomiya) and is also responsible for training the next generation of lens polishers.

What are the most difficult parts of the job to master when learning to be a lens polisher?

The greatest challenge is the level of precision required – achieving that one to the millionth. Building the experience to know by eye what is required takes a long time. Lens polishing is one of the most difficult parts of the lens-making process, and you have to develop and use the three senses: sight, hearing and touch. Hearing, because when the lens touches the diamond plate it makes a certain sound, and you get to know when that sound isn't right. Also, with touch, you pick up the vibrations in your hand and you can tell by the vibration when something isn't right.

What makes a good lens polisher?

They have to be able to work to the precision required, but also when a lens fails to achieve the required standard, they need to be able to identify the best way to correct it. They need to look at the lens and say, 'Okay, this is what I need to do' and go straight to the solution, rather than taking the long way around.

What qualities make a good Takumi?

You just have to like lens polishing. I am the Takumi, but I don't actually know what I'm good at. But people tell me that I'm good so I just keep doing it. But I can probably say that I work with speed. When it comes to completing a lens to perfect condition I work much faster than other people, so that tells me that I am at a higher level.

Do you oversee all the lenses made in the Utsunomiya factory?

I oversee the polishing of all the lenses that Canon produces here. But with the higher-resolution broadcast lenses, where it is more difficult to achieve the required level of precision, I get hands on and do them myself.

Which are the most difficult lenses to polish?

The super-telephoto lenses, with their large front elements, are very difficult, and also lenses that have a high curvature, such as the wideangles.



Canon's HQ at Shimomaruko in Tokyo where the design process for its cameras takes place

Talking to the top

During our visit to Japan we put a few questions to Canon's senior management. Here's a few of the ones they were able to answer

Does Dual Pixel AF influence lens design? Will all future lenses have STM rather than USM motors?

Naoya Kaneda (NK): While all of our EF lenses are compatible with cameras that use Dual Pixel AF, now that DSLRs have movie technology it is more important to have a smoother and quieter focus movement when shooting video. So we developed the STM motor. But this is not a replacement for the USM. Our thinking is that we want to have a variety of motors with different characteristics so we can use the most ideal technology for the design proposed, and for its intended use. Having said that, USM lenses can of course be used for video shooting too.

How important is size when striking a balance against image quality?

Kengo Ietsuka: For some of our users the size and weight is most important but for others they are prepared to carry a larger lens to get better image quality. But with every lens we make we try to make the lens as small and light as we can within the constraints of the image quality and maximum aperture we are aiming to achieve. Many of our lenses are already as small and light as they can be, but with some of the older ones, newer technology means we could possibly revisit these and make them a little smaller now. But we must strike a balance between producing new lenses and updating the existing ones.

Do you make L series lenses anywhere else in the world?

NK: We do have other lens factories in Taiwan and Malaysia, but they do not make any L series lenses. There we interpret the technologies that have been developed here for L series and adapt them for the more entry-level lenses.

Which lens have you made the most, here?

Shingo Hayakawa (SH): Among the lenses that we currently produce in this factory, we have made more EF24-70mm f/2.8L II USM lenses than any other.

What are the biggest challenges in making L series lenses?

(SH): There are many steps in the process that are very complicated but our ultimate goal with L lenses, apart from superior image quality, is the extra durability that they need for professional usage. It isn't just wear and tear but also susceptibility to knocks and impacts. Zoom lenses are particularly vulnerable with the number of moving optical parts.

Are the L series lenses more hand-made?

SH: Some of the longer telephotos and wide maximum aperture lenses are nearly, or in some cases completely, assembled and fine-tuned by hand because of the very high degree of precision required.

Is there a high rejection rate for lenses that don't meet the required standard?

SH: The percentage is very low. From the initial design we go through a simulation to calculate

THE INTERVIEWEES

Canon's senior management team for lenses, from the business, design and production areas. Every Canon lens you can buy owes its existence to these people



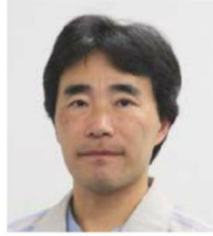
Naoya Kaneda
Head of Canon's Lens Product Business



Shingo Hayakawa
Deputy Group Executive of ICB Optical Business Group



Tetsushi Hibi
Senior General Manager, Optical R&D Centre



Manabu Kato
Deputy Senior General Manager, Optical R&D Centre



Seiichi Kashiwaba
Head of Lens Mechanical Design Department



Kengo Ietsuka
Business and Product Planning Manager

what the tolerance will be for mass production of the product. We aim for a zero rejection rate of course, and one of the ways we do this is to emphasise the importance of frequently maintaining the tools and machinery that we use on the production lines to make the parts.

Higher-resolution image sensors demand sharper, higher-performing lenses to make the most of them. Canon now has a 50MP sensor. What is the theoretical maximum sensor resolution that the new L series lenses are good enough to be used with?

SH: We recently showed a prototype of a 250-megapixel sensor. We do not know if this will ever go into production but if it did, depending on the desired objectives we may have to develop new lenses to use with it.

Which Canon technology do you think your competitors are the most jealous of, and wish they had done first?

Seiichi Kashiwaba (SK): Probably when we switched from the FD to EF mount and went to a fully electronic mount. It was very brave at the time but is the basis for the success Canon has achieved since, and kept us at the top of the camera industry for the past 30 years.

Of all the Canon lenses that you've been involved with in your time at Canon, which has been the most revolutionary, or that you're the most proud of?



Left: Canon has made more EF24-70mm f/2.8L II USM lenses than any other at Utsunomiya
Right: the stunning, innovative EF11-24mm f/4L USM

SK: I'd have to go back to the EF35-135mm f/4-5.6 USM of the 1990s, which was where we first introduced full-time manual focusing for USM lenses. When autofocus lenses were in their early days the focus could not be adjusted manually after AF, and this lens solved those problems. That motor is still the basis for the focusing mechanism in our lenses today.

SH: In the 1990s I was involved with the development of the first SLR lens with Optical Image Stabilisation, (the EF75-300mm f/4-5.6 IS USM), which was revolutionary at the time, so I have many happy memories of that. Now, in the digital era I manage the development of lenses that offer higher resolution and performance than ever before. The lens I'm most proud of in the current range is probably either the Canon EF11-24mm f/4L USM, (the widest angle view ever achieved by a rectilinear full-frame DSLR lens), or the EF200-400mm f/4L IS USM Extender 1.4x (the world's first lens with a built-in extender).

Manabu Kato: For me it's the first generation of the DOE (Diffractive Optical Element) lens.



Canon's ground-breaking EF200-400mm f/4L IS USM Extender 1.4x

I was not part of that development team. I was in a neighbouring team at the time producing DOE lenses for other applications. The technology was completely new, and teams from several fields were all researching different possibilities, but our team managed to succeed in commercialising our product first.

Tetsushi Hibi: I previously worked on our broadcast and cinema lenses, and there was a period where we had to come up with ten types of EF Cinema lenses at the same time, and I remember that trying to keep a lid on all of the schedules was one of the greatest challenges of my career.

AP



The executive conference room

Manfrotto Street CSC Pouch

Do you really need a camera bag at all?

Andy Westlake tests a substitute

● £20 ● www.manfrotto.co.uk

ONE quirk of being a photographer, I've found, is that as you get more committed and acquire more kit, the more bags you seem to need. Some days you might want a small holster for a camera and a lens; other days you may prefer a large messenger to carry all your lenses. On other occasions a conventional camera bag isn't the right option at all.

For this latter scenario, camera bag makers have started to produce separate padded inserts, designed to fit into any bag and provide a protective shell for your camera and lenses. The idea is that you can put your core kit inside, then move it around between bags depending on what else you're carrying. One day you might want to use a backpack to carry some food and a change of clothes; the next a small shoulder bag might be the right answer. All you have to do is swap your loaded-up insert between them.

The pouch we're looking at here is part of Manfrotto's Street collection, and designed to take a mirrorless camera, or perhaps a very small DSLR, along with one or two lenses. The internal dimensions are around 20x10cm in footprint, and 18cm in height. This is just big enough to hold a Sony Alpha 7 II with 24-70mm f/4 lens attached and a little extra space for spare batteries.

Two removable dividers are included, covering about two-thirds of the internal height, with one having a fold-over top. By positioning them strategically I was able to fit in my Olympus OM-D E-M5 Mark II with 12-40mm f/2.8, 40-150mm f/4-5.6, and 20mm f/1.7 lenses. Or you could probably carry a compact 35mm film SLR with two or three small primes if you wanted.

Verdict

With generously padded walls and base, the Manfrotto Street CSC Pouch should give decent protection to your kit, and the outer fabric is water-repellent in case of mishaps. It's easy to configure it to fit your kit and has a useful amount of space for bits and bobs such as filters, memory cards and batteries in the outer pockets. However, the camo-patterned fabric that's used for the interior and drawstring closure turns out to be an odd choice, because when you go looking for anything inside the bag, it can be weirdly hard to find! Strange colour choices aside, this is quite a neat solution for those occasions when you want to carry a small camera kit inside an everyday bag.

At a glance

- Takes a camera and one or two lenses
- Slips into any bag
- Drawstring cover
- 18x22x11cm (external)

Rear pocket

A single full-width pocket covers the back of the bag, with a zip closure to keep the contents safe

Movable dividers

Two padded dividers are provided, and can be repositioned using Velcro

Front pockets

Twin slip-in half-width pockets on the front are ideal for holding filters

Water-repellent cover

Can be folded down around the outside of the bag to give clear access to your kit

Amateur Photographer
Testbench
Recommended
★★★★

ALSO CONSIDER

Tenba makes a range of camera-bag inserts in a variety of sizes, with the BYOB 9 being closest in size to this Manfrotto. The Tenba versions have a zip lid closure and more external pockets, and can even be bought with a lightweight matched carry bag.



TechSupport

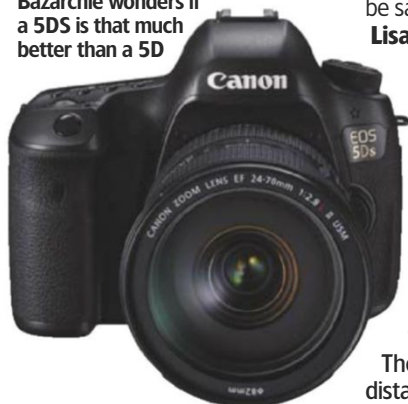
Email your questions to: ap@timeinc.com, Twitter @AP_Magazine and #AskAP, or Facebook. Or write to Technical Support, Amateur Photographer Magazine, Time Inc. (UK), Pinehurst 2, Pinehurst Road, Farnborough Business Park, Farnborough, Hants GU14 7BF

Megapixels – how many do I need?

Q Like most, I want good image quality. As much as I like new technology, I struggle to see the difference between a new FF camera and an old one in reasonable condition. Some say larger pixels are better but new sensors have more megapixels, hence lower size pixels. Is a Canon EOS 5DS that much better than say a Canon EOS 5D, and if so, why? What am I missing? **Bazarchie (AP forum)**

A Sensor resolution is important, up to a point. It rather depends on your application. If you are likely to print very large or crop your images heavily then the importance of how many pixels you have to play with comes to the fore. Otherwise the quality of your pixels becomes the most important consideration. But what is pixel quality? For a start, there is signal-to-noise ratio. Dynamic range is also important if you shoot in particularly harsh lighting. Colour response is another variable, with better sensors able to record a wider gamut of colours. These three qualities are usually linked to pixel pitch or the physical size of each sensor photosite, and all other things being equal, a larger photosite is usually better.

Bazarchie wonders if a 5DS is that much better than a 5D



Looking at lab test data, the 30-megapixel Canon EOS 5D Mark IV delivers substantially better dynamic range than the 50-megapixel Canon EOS 5DS, along with measurably better colour sensitivity. Noise, on the other hand, is pretty much the same for both cameras at comparable ISO sensitivities. However newer sensors are better than old ones, due to advances in the design of the photosites. This means that both cameras comprehensively outclass the original 12MP Canon EOS 5D on all counts, despite the older camera's larger pixel pitch.

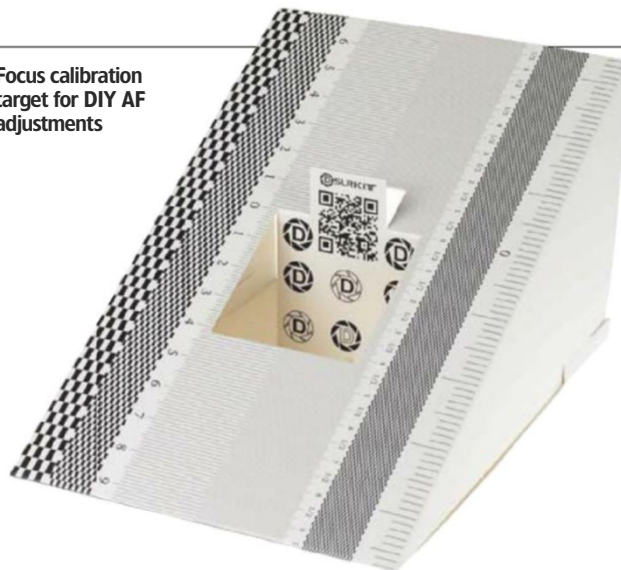
Is my tele zoom soft?

Q I bought an Olympus OM-D E-M5 with 12-50mm and 75-300mm lenses about four years ago; I have been more than happy with them. I then began to read opinions that the 75-300mm is a bit soft beyond 200mm. I had not noticed this, but it started to bug me. I have the Mark II version of the lens and while it's not particularly expensive I assumed it would be sharp enough throughout the zoom range. I have now started looking at my shots, and I can detect a little comparative softness between 200 and 300mm. I am planning a safari trip to Zambia next year, and I am now wondering if I should be saving up for the 300mm Pro.

Lisa Ford

A It's not unusual for telephoto zoom lenses to be comparatively soft at the longer end of the zoom range. Subject and camera movement will also progressively increase their effect on the sharpness of the image as you zoom in. There will tend to be greater distance between the lens and

Focus calibration target for DIY AF adjustments



Fixing D7000 focus inaccuracy

Q I have a Nikon D7000 and use it with the 18-105mm zoom lens that came with it. I have begun to notice that when using the lens at the 105mm setting, which I do a lot, the camera isn't focusing correctly. From the look of things, details that are just a bit further away are sharp but what I'm focusing on is slightly soft. Would this be a problem with the lens or the camera itself, and what can I do to fix this? I have managed to work around it by manually compensating for the focus shift but it's a pain to do. **Alan Shenley**

A This sounds like a classic case of 'back focus'. Fortunately, the required recalibration of your AF system is a DIY job with your D7000. You can do this by using the Autofocus Fine Tune option from the Setup menu. Make sure the camera is set to a single central AF point first. The AF fine tune value should default to zero. The procedure is then to focus on, preferably, a focus test target, although you could use a ruler. Then you just need to alter the fine tune value until the focus is correct. Don't forget to save the adjusted value before exiting.

the subject at the long end of the zoom so atmospheric effects could come into play. Especially with the Olympus 75-300mm lens, a degree of diffraction softening could be affecting images shot at apertures smaller than around f/5.6 on your E-M5. Your lens has a maximum aperture of f/5.7 at 150mm. By 200mm the maximum aperture has closed to f/6.1, and by 300mm it's only f/6.7. But let's not get too overwhelmed by technicalities.

The m.Zuiko 75-300mm f/4.8-6.7 is a very respectable zoom lens and, in the right hands, is capable of impressive results at any part of its zoom range. The 300mm Pro has a maximum aperture of f/4; it's not a variable focal length lens and it's much more expensive. Yes it will be better, but whether it's the lens for you is something that only you can answer.

Q&A compiled by Ian Burley

Professor Newman on...

What exactly is ISO?

A number of false facts have led to a belief that ISO is a part of exposure. Prepare to be enlightened



ISO, or film speed, has unfortunately become one of the most misunderstood parts of photography. There are two fundamental misunderstandings embedded in the collective consciousness that are routinely stated as fact online and even in books. I believe it is best to dispel false definitions when they arise, so here goes.

Dispelling the myths

False fact one is that ISO is a part of exposure. This arises from the popularity of Bryan Peterson's photographic triangle mnemonic, which has unfortunately been renamed somewhere along the lines of exposure triangle. This little graphic (below) shows that, apparently, exposure is a product of three variables: aperture, shutter speed and ISO. This cannot be the case, since ISO is defined in terms

of exposure. The applicable ISO standard, which defines ISO speeds and exposure indices for digital still photography is 12232:2006. Since speed is a function from exposure to density (in film days) or value (in the case of digital), all these definitions specify the value produced by a given exposure.

For instance, the most used digital exposure index is the Standard Output Sensitivity (SOS), and is defined as follows. The SOS (I_{SOS}) is computed using the following equation: $I_{SOS} = 10/H_{SOS}$, where H_{SOS} is the exposure required to produce the specified standard level digital signal output equal to $461/1000 \times O_{MAX}$, where O_{MAX} is the maximum output value of the digital system. For 8-bit systems, the reference level shall be 118. If ISO was a component of the exposure H_{SOS} , then the definition would be self-referential and nonsense. So,

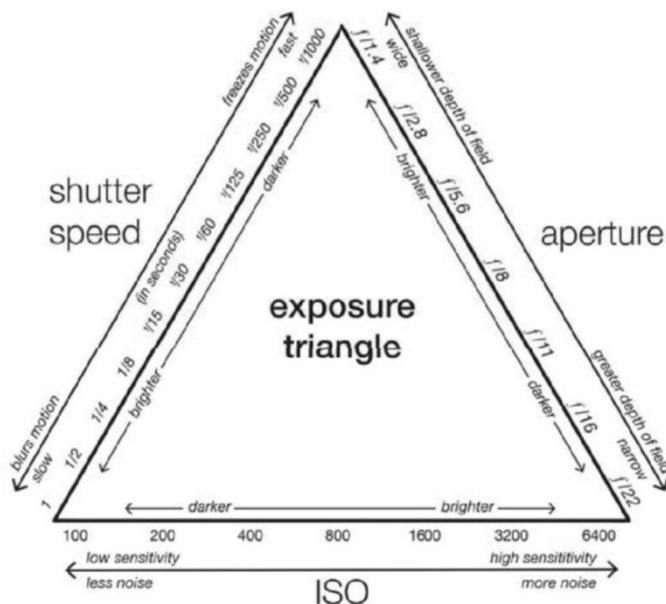
the very definition of ISO tells us that it is not a part of exposure. Exposure is, rather, the density of the light power at the image plane, and is measured (according to the ISO standard) in lux seconds.

The truth about 'gain'

The second false fact is that ISO is gain or amplification. The definition above tells us immediately that this is not the case. There is no mention of gain or amplification, and more generally, the standard tells us that an ISO speed is a numerical value calculated from the exposure provided at the focal plane of a digital still camera (DSC) to produce specified camera output signal characteristics using the methods described in this International Standard.

I suspect that the problem here is the word 'signal', which has been seized upon by some electrical engineers, who in the early days of digital photography were employed by baffled film experts to provide an explanation of how these new-fangled digital monstrosities worked. The word signal confuses because it is generally applied to an analogue quantity. However, here we are talking about the output signal of a DSC, so this is digital in nature. Thus, what is being talked about is the computational operation required to realise the two equations given above.

The key point here is that the computational operations are multiplication and division, and are performed on a digital measurement of exposure. In the real world, variable analogue gain is used in digital camera circuits, but this is in order to optimise the electronics for a particular ISO setting, not because that gain setting is ISO. Nowhere in the ISO standard are gain settings defined.



The misnaming of the photographic triangle to the exposure triangle is possibly responsible for the incorrect belief that ISO is a part of exposure

Bob Newman is currently Professor of Computer Science at the University of Wolverhampton. He has been working with the design and development of high-technology equipment for 35 years and two of his products have won innovation awards. Bob is also a camera nut and a keen amateur photographer

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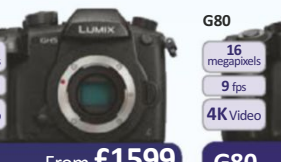


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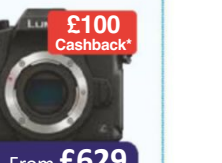


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16-300mm f3.5-6.3 Di II VC PZD Macro	£429
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18-270mm f3.5-6.3 Di II VC PZD	£299
18-400mm f3.5-6.3 Di II VC HLD	£649
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11-24mm F4 L USM.....	E++ £2,139	Tokina 10-17mm F3.5-4.5 AT-X Fisheye..Ex Demo	£469	Fuji X-A1 Black Body + 16-50mm XC.....	As Seen £159	Panasonic 35-100mm F2.8 II G X OIS.....	Mint- £789
14mm F2.8 L USM II.....	E+ / E++ £849 - £929	Tokina 11-16mm F2.8 DX ATX.....	E+ / Mint- £249 - £279	Fuji X-E1 Silver Body Only.....	As Seen £99	Olympus 40-150mm F2.8 M.Zuiko Pro.E++ / Mint-	£899 - £949
15mm F2.8 EF Fisheye.....	E+ / E++ £369 - £449	Tokina 12-24mm F4 ATX PRO SD.....	E++ £299	Fuji X100T - Black.....	E++ £669	Olympus 40-150mm F4-5.6 ED M.Zuiko.....	E++ £399
15-45mm F3.5-6.3 IS STM EF-M.....	Mint- £149	Tokina 16-50mm F2.8 ATX Pro DX.....	E++ £349	Fuji X100T - Silver.....	Exc / E+ £549 - £629	Panasonic 45-150mm F4-5.6 Asph OIS.....	E++ £119
15-85mm F3.5-5.6 IS USM.....	E++ £329	Tokina 20-35mm F2.8 ATX Pro.....	E+ £249	Nikon V3 Black + 10-30mm + DF-N1000.....	Mint- £649	Panasonic 45-175mm F4-5.6 Asph Vario PZ.....	E++ £179
16-35mm F2.8 L USM MKII.....	E++ £779	Tokina 80-200mm F2.8 ATX.....	E++ £249	Nikon J3 + 10-30mm.....	E++ £149	Olympus 45mm F1.8 M.Zuiko.....	E++ £139
16-35mm F4 L IS USM.....	E+ / Mint- £589 - £669	Voigtlander 28mm F2.8 SLII Asph.....	Mint- £299	Nikon J1 Red + 30-110mm.....	E+ £199	Olympus 60mm F2.8 ED Macro.....	Mint- £279
17-40mm F4 L USM.....	E+ / E++ £349 - £419	Voigtlander 40mm F2 Ultra SLII EF.....	Mint- £279	Olympus Pen-F Black Body Only.....	E+ £699	Olympus 75mm F1.8 ED Black M.Zuiko.....	E+ / Mint- £479 - £519
17-55mm F2.8 EF-5 IS USM.....	E+ / E++ £349 - £399	Zeiss 18mm F3.5 ZE.....	E++ £689	Olympus Pen-F Silver Body + ECG-4 Grip.....	E++ £739	Olympus 75mm F1.8 ED Silver M.Zuiko.....	Mint- £519
17-85mm F3.5-5.6 IS USM.....	As Seen £89	Zeiss 21mm F2.8 ZE.....	E+ / E++ £769 - £869	Olympus Pen-F Silver Body Only.....	Mint- £739	Panasonic 100-400mm F4-6.3 Power OIS.....	Mint £1,129
18-55mm F3.5-5.6 IS STM.....	E++ £89	Zeiss 25mm F2 ZE.....	E++ £949	Olympus E-M5 MKII Body Only - Black.....	E+ £499	Olympus 1.4x MC Teleconverter.....	Mint- £199
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24mm F1.4 L USM MKII.....	E++ / Mint- £989 - £1,049	Sigma 2x Apo EX DG Converter.....	E++ £319	Olympus E-M10 Body + EC-G1 Grip.....	E++ £199		
24mm F2.8 EF.....	E+ £169	2x EF Extender.....	As Seen / E++ £59 - £99	Olympus E-M1 Black Body Only.....	E++ / Mint- £439 - £459		
24mm F2.8 STM.....	Mint- £99	2x EF II Extender.....	E++ £169	Olympus E-P2 Black + 14-42mm.....	E++ £139		
24mm F3.5 L TSE.....	E+ £649	2x EF MKIII Extender.....	E++ £299	Panasonic DC GH5 Body Only.....	E++ / Mint- £1,389 - £1,449		
24-70mm F2.8 L USM II.....	E+ / E++ £1,149 - £1,189	Zork Mult FOCUS System Lens.....	E++ £799	Panasonic GH4 Body Only.....	E++ £699		
24-70mm F4 L IS USM.....	E+ / E++ £549 - £599	Metz 15 MS-1 Flash.....	E++ £145 - £179	Panasonic GX8 Black Body Only.....	E++ £499		
24-105mm F4 L IS USM.....	E++ £429	Metz 150AF1 Digital.....	E++ £99	Panasonic G3 Black Body Only.....	E+ £79		
28mm F1.8 USM.....	E++ £279	Nissin Di622 Flash.....	E+ / E++ £49 - £59	Panasonic GF-3 Black Body.....	E+ £89		
28mm F2.8 IS USM.....	Mint- £299	Nissin Di866 Flash.....	E+ / E++ £89 - £99	Panasonic GF-5 Body Only.....	E++ / Unused £79 - £99		
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28-135mm F2.8-5.6 IS USM.....	E+ £129	Sigma EF500 ST Flash.....	E+ £29	Sony A7R II Body Only.....	E++ £1,749		
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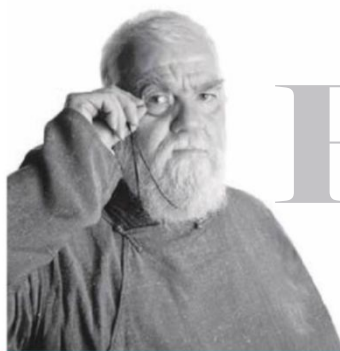
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Final Analysis

Roger Hicks considers...

'Conversation', 2012, by Kathryn Polley



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In 2017 Kathryn Polley was one of three winners of the Jill Todd Photographic Award, established to encourage recent graduates in photography. It was set up by Jill's parents to commemorate the tragically early death of their photographer daughter. So I visited www.jilltoddphotoaward.com and www.kathrynpolleyphotography.com as well as Kathryn's other site, www.gerenargyll.co.uk. I found many excellent pictures, but this one stuck firmly in my mind.

Although I keep saying that it's possible to admire a picture without wishing that you had taken it, it is also possible to admire a picture and to wish very much that you had taken it. This for me is one such picture. A few of my own photographs are a bit like it: taken through glass, with reflections or movement or both. They are among my

favourites. But why? Why this picture, and why mine that are a bit like it?

The answer is impossibly multifaceted, but I think it can be summarised in one word: 'glimpse'. It's a moment seen and captured – something that may only have existed for a moment; an application for which photography is uniquely suited. The German word *augenblick* (eye-blink) sums it up perfectly. And although we've all heard of Henri Cartier-Bresson's *The Decisive Moment* (1952), intriguingly this phrase isn't actually a translation of the title in French, which is *Images à la Sauvette*, literally translated as 'pictures on the fly'.

What makes this image perfect?

This is very much a picture *à la sauvette*, but what particularly distinguishes it? Perhaps, most of all, it's the transience. The blurred, moving figure sets the tone.

So does the wheeled suitcase beside the left-hand figure: on the move again. Someone working in the background: *à la sauvette*. For that matter a café-bar is a place where people come and go all day.

The doors on the left simultaneously separate us from the two at the table, and invite us inside. There is comfort there, and warmth. It looks like a good place to talk to a friend. There is context everywhere.

To be sure, there is an enormous amount of luck involved. A moment earlier or later and the face of the principal character (with whom, I suggest, we identify) might have been obscured by the reflection. As the saying goes, though, 'the more I practise, the luckier I get'. When you get it wrong, keep quiet. When you get it right, shout it from the rooftops. Then keep practising. Not just practising shooting, but also selecting. And shouting.

AP

Roger Hicks has been writing about photography since 1981 and has published more than three dozen books on the subject, many in partnership with his wife Frances Schultz (visit his website at www.rogerandfrances.eu). Every week in this column Roger deconstructs a classic or contemporary photograph. Next week he considers an image by Keith Dannatt



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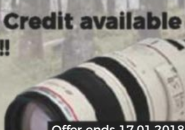


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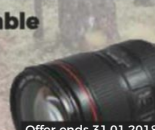
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